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The inter-institutional teaching experiment described demonstrates that faculties of several institutions of higher learning may work together in a cooperative project for improvement in college teaching. Although this cooperation is a new and complex field in educational administration, it is highly useful.

There seemed to be many differences in the attitudes of students toward televised teaching, ranging from strong approval to strong opposition. Generally, students indicated no opposition to the idea of inter-institutional television instruction. After exposure to these courses, some students indicated a preference for the televised course over the conventionally taught course. There was some concern over the loss of personal interaction with the professor and over the inability to ask questions in class, but most attitudes toward televised teaching seemed to be based on the same factors of like and dislike which determined their attitudes toward regular classroom instruction. The significant finding seemed to be that students will accept and can react favorably to televised courses which are taught by professors on campuses other than the one in which the student is in residence.

Faculty members indicated some reluctance toward televised teaching, but tended to agree that experimentation should be carried out in television to determine its potential as an educational tool. They felt that lower-division, elementary or beginning courses, with large enrollments and many sections, were most acceptable for inter-institutional instruction and registered more willingness to accept this type and level of course by television than more specialized upper-division courses.

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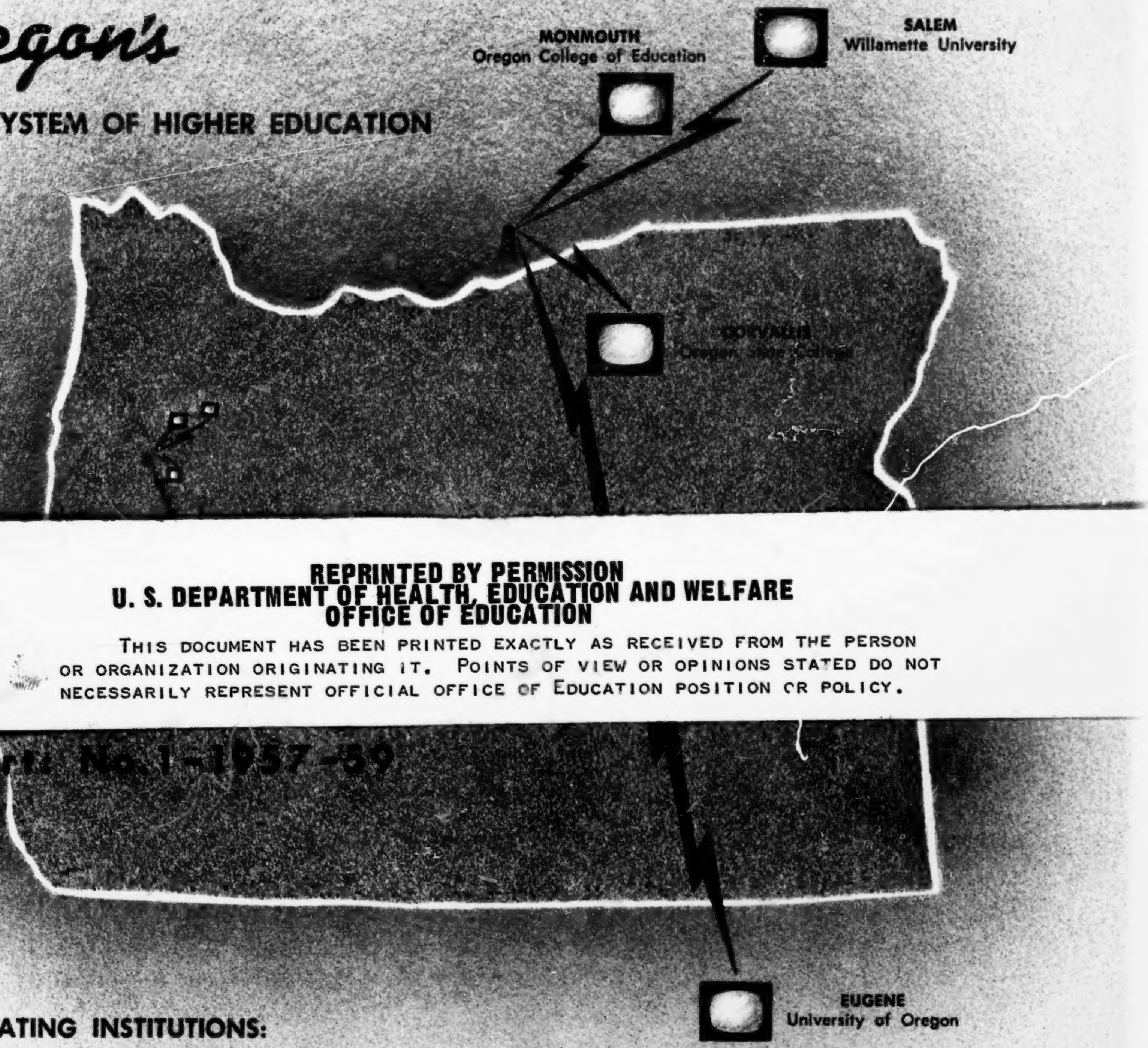
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INSTRUCTIONAL TECHNOLOGY - U.S.C.

Inter-Institutional Teaching by Television
in the
Oregon State System of Higher Education

Report No. 1—1957-1959

GLENN STARLIN and JOHN E. LALLAS

Project Sponsored by
The Fund for the Advancement of Education

A "Colleges for Oregon's Future, 1960-1970" Publication
Oregon State System of Higher Education
Eugene, Oregon

March 1960

Foreword

Colleges must seek new ways for making more efficient use of instructors because the number of qualified college instructors is increasing at a lesser rate than the numbers of college students. Unless these new ways are found, quality of instruction will suffer.

It seems appropriate that these new ways should be developed, at least in part, by the west coast colleges that are due to bear the greatest proportionate gain in their student bodies.

The Oregon State System of Higher Education is in a unique way well set up to experiment on inter-institutional teaching methods. It is a highly unified system of colleges operated under a single executive officer and a single board of regents. The Chancellor of the State System of Higher Education has statutory authority to impose methods of teaching upon the public colleges of the state. However, the long tradition of the State System has been that the Chancellor looks to the individual institutions and their faculties as the educational policy source. In Oregon, as in other states, educational change and improvement will come only as faculties remain interested and active in developmental work.

The inter-institutional teaching experiment described in this report demonstrates that faculties of several institutions may be meshed together to work in a cooperative project for improvement in college teaching. Inter-institutional cooperation is a new and complex field in educational administration. Already it has been demonstrated that such cooperation is useful. The machinery of the State System of Higher Education in Oregon admittedly has been of considerable assistance in the communication process between institutions.

Oregon has been honored to be chosen for the conducting of this inter-institutional experiment. In return it seems that the Oregon public colleges will in the very near future incorporate inter-institutional television teaching in their instructional programs on a permanent basis. As the experiment is wound up at the end of a five-year period, a regularized television teaching program will take up the released transmission time.

We are grateful to the officials of The Fund for the Advancement of Education and of the Ford Foundation for their assistance in this program. At all times we were given by them encouragement and inspiration to push forward.

John R. Richards, Chancellor

Oregon State System of Higher Education
January 11, 1960

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CHAPTER I

General Characteristics of the Project

Background

For a number of years the Oregon State System of Higher Education has been interested in the potential of television for educational purposes. A comprehensive plan for utilization of reserved non-commercial educational channels in the state was worked out by a State System committee in 1952. Hope for obtaining finances from the state legislature for initiating this plan for educational television, however, did not meet with success in either the 1953 or 1955 legislative session, although an appropriation was made for continuing studies. In the fall of 1955 the Chancellor of the State System of Higher Education, through an inter-institutional television committee, set out to explore the possibility of using closed-circuit television for teaching on an inter-institutional basis. Sampling of faculty attitudes by the inter-institutional committee and consultation with administrative heads of the state institutions of higher learning indicated enough interest to justify entering into some experimentation with teaching by television. During the winter months of 1955-56 an experimental plan was developed to utilize television for inter-institutional teaching.

The original plan for inter-institutional classroom television in the Oregon State System of Higher Education proposed use of a closed-circuit television network. It suggested televised courses in social science, in science, and in education (which are common to the University of Oregon, Oregon State College and Oregon College of Education) be offered at all three institutions simultaneously. These schools are geographically removed from one another by 40 miles and 20 miles respectively. It was also proposed that the plan include, in one of the initial two years of the experiment, that televised courses be "kinescoped" and distributed for delayed showings as courses at Portland State College, Eastern Oregon College or Southern Oregon College.

In May of 1956, the Chancellor of the State System of Higher Education submitted the above proposal to The Fund for the Advancement of Education requesting funds to help support the proposed experiment. This resulted in a grant of $200,000 for experimentation in inter-institutional teaching by television for the 1957-58 and 1958-59 academic years. This money was matched by State System funds to permit acquisition and installation of television equipment for the project.

To initiate the program, a director was appointed for the project and committees were established at each institution. They were charged with the responsibility of canvassing faculty and determining what course work would be offered by television. For the 1957-1958 academic year, a course in History of the United States, taught by Dr. Wendell Stephenson, originated from the University; a course in General Chemistry taught by Dr. Wendell Slabaugh, originated from Oregon State College; and a year's course in Education was offered and involved teaching faculty from Oregon College of Education, Oregon State College and University of Oregon. Dr. Donald Tope of the University taught School in American Life; Dr. David Brody of Oregon College of Education taught Human Development; and Drs. Robert Reichart and Denis Baron of Oregon State College taught Educational Psychology: Learning.

In February 1957, in order to become better acquainted with teaching by television, the director of the project and staff members from the University of Oregon, from Oregon State College, from Oregon College of Education and from Portland State College made a two weeks tour of television teaching operations. Visits were made to Miami University (Ohio), New York University, Pennsylvania State College, San Francisco State College and one member visited Los Angeles City College. Talks with television teachers, administrators, production personnel and students proved most helpful as a means of informing the personnel from Oregon's State System of Higher Education of the problems and pleasures of teaching by television.

Before the inter-institutional experiment started and in order to orient the professors to actual teaching by television, a preliminary closed-circuit experiment was carried out with vidicon-camera television equipment which was already available at Oregon State College and at the University. During the spring term of 1957, Dr. Wendell Slabaugh taught a class of students in Chemistry over the closed-circuit facilities at Oregon State College. After mid-term at the University, Dr. Wendell Stephenson taught one lecture per week of his History of the United States course over closed-circuit television. This experience proved valuable for both teachers and production personnel. Questionnaires distributed to the students who participated in the preliminary closed-circuit experiment showed favorable attitudes toward televised teaching.

While plans for the project were under way, an invitation was extended to Willamette University, a private institution in Salem, Oregon, to participate in the experiment. With their addition, then, the number of participating institutions was raised to four.

During the second year of the project, 1958-1959, the course offerings included Appreciation of Literature taught by Dr. Roland Bartel of the University of Oregon; English Composition taught by Dr. John Bellamy of Oregon College of Education; and a continuation of General Chemistry taught by Dr. Wendell Slabaugh of Oregon State College. The latter course was also recorded by kinescope film. The same four institutions participated as did in 1957-1958.

The Basic Approach

Principles of Organization

Since the project, to our knowledge, was the first attempt at utilizing television for simultaneous classroom instruction among several institutions of higher education, it presented some new and unique problems in administration and operation. Some of these will be mentioned here and others will be apparent from a review of the subsequent data.

From the beginning, the plan for utilizing television as a teaching tool on an inter-institutional basis was looked upon as an experiment. Primary interest was to search out the potential of television as an instrument which might improve the quality of instruction and which might be used to multiply the effectiveness of outstanding teachers. It was not assumed that the experiments in televised teaching conducted at Pennsylvania State University, Miami University, the Chicago Junior Colleges, and elsewhere had shown that instruction by television was desirable, and was, therefore, being adopted in the Oregon State System of Higher Education. Rather, the Oregon Inter-Institutional Television Teaching Project was considered as an extension of experimentation being carried on at other institutions on an intra-institutional basis.

Participation in the project was on the basis of voluntary decisions by the different school administrators and faculties rather than by State Board edict. A basic assumption of the study was that television as an aid to teaching must be looked upon as an evolutionary rather than a revolutionary tool and that experimental use of it should be by choice rather than by arbitrary order. This demanded discussion and negotiation among the different institutions so that mutual agreement could be reached on course offerings. It required, further, some subtle adjustments in scheduling, in course content and general planning in order that the conventional teaching methods and teaching loads would not be completely disrupted by the televised teaching experiments. As might be expected, obtaining cooperation and maintaining coordination and communication among the several institutions proved a most difficult problem as the experiment progressed.

Administrative Organization

The project was set up under a single coordinator who was responsible for working with the various institutions in the selecting of course offerings and in seeing that all administrative and production aspects were properly handled. This administrator reported directly to the Chancellor of the State System of Higher Education. Approximately three-quarters of the coordinator's work load was devoted to the inter-institutional television teaching experiment.

Working with the project director, and reporting directly to him, was a research director who was responsible for planning, conducting and analyzing the basic research carried on in conjunction with the project. The research director was assigned one-half time to the project.

Each participating institution set up a committee to deal with the problems of initiating televised instruction on its campus. These committees were composed of representative faculty members from various departments and acted on both policy and operational matters affecting the development of television teaching. The chairman of the television committee on each campus acted as the main contact for the project coordinator in discussing problems which arose as the experiment got underway. These committees met on call of the chairman and an attempt was made to hold a monthly meeting on each campus to permit regular discussion by committee members with the project coordinator and research director.

Equipment and Facilities

Initial plans for a closed-circuit operation were abandoned after costs for leasing of such facilities proved to be too costly. It was determined that it would be more practicable to construct a low-powered television station and use it as a means of transmitting courses on an inter-institutional basis. Since Channel 7 in Corvallis was reserved for non-commercial educational television use, and since Corvallis was about midway between participating institutions, it was decided to make application to the Federal Communications Commission to operate on Channel 7. With permission granted in May, construction of the transmitter and studios were completed by the start of school in October of 1957.

The transmitter site is on Vineyard Hill, five miles north of Corvallis, Oregon. The transmitter is an RCA-TT-5A which operates with five kilowatts of power. The antenna height is 1210 feet above average terrain and the televised signal reaches the campuses of all participating institutions very well.

Production studios are available on both the Oregon State College and University of Oregon campuses. Each studio is equipped with two RCA image orthicon television cameras and with both slide and motion picture projectors. A micro-wave relay link is used from each studio to beam programs to the transmitter atop Vineyard Hill from where they are broadcast open-circuit over Channel 7.

Viewing rooms on the different campuses are set up in regular classrooms. Television receiving sets are console models with 24 inch screens and speakers mounted in the front of the set. The sets are mounted on stands constructed from one inch angle iron with a plywood platform fitted in the steel frame at approximately five feet from the floor. Casters are mounted on the legs of the stands to permit movement of the set within the room.

The broadcast facilities of Channel 7 (call letters, KOAC-TV) are used for inter-institutional classroom television teaching in the morning hours. During the evening hours, the station broadcasts a full schedule of educational television programs. This includes special programs produced from its own studios and program series received from the National Educational Television and Radio Center.

Production

The production studios at both Oregon State College and the University of Oregon have a full production staff assigned to the task of producing courses for television broadcast. A production director and production assistant worked directly with the professor teaching a course and assisted in any way possible in adapting the course to television. The basic philosophy which underlies production has been that the course should utilize to full advantage the techniques of television production. Television has not been considered as merely a reporting medium designed to distribute the procedures of the conventional classroom to a number of students watching a television tube. It has been assumed that television might have certain advantages in the use of visuals and other production aids not readily available to the regular classroom instructor and an attempt has, therefore, been made to utilize the unique features of television. Our contention has been that television production is an art and that teaching by television will be better if proper attention is given to the art of production. An attempt has been made, therefore, to produce the courses in a professional manner which would compare somewhat favorably with commercial standards of production. At no time has production been used for its own sake or has it been permitted to interfere with course content; it has been used in an attempt to clarify further and generally to enhance the material offered in the course.

It might be interesting to note that the basic practice in the use of production personnel varied considerably in each of the studios at the University of Oregon and at Oregon State College. At the University, advanced students in radio-television were used in all production positions except in the producer-director and the staging and/or production assistant roles. These latter two positions were occupied by regular television staff members. The jobs of cameraman, floor manager, audio men, boom operators, switchers, were all handled by students. A qualified engineer also operated as a regular member of the television staff.

At the Oregon State College studio, all production positions were handled by regularly employed members of the television staff under the general supervision of the chief engineer of the television station. Television technicians operated the cameras and handled lighting, staging and all other production details. The producer-director was a full-time television staff member but production assistants for the courses were hired on a part-time basis.

Both approaches to production produced satisfactory results.

CHAPTER II

Overview of the Research Plan

Introduction

The design upon which the Oregon Inter-institutional Television Teaching Project was based involved the simultaneous investigation of several broad research areas. The purpose of this chapter is to give a general overview of these broad areas of research so that the reader can develop a better understanding of the entire project. Presented specifically in this chapter are: general research objectives; a description of the sample; and a brief discussion of the methods of procedure and evaluation.

Because of the complex nature of the design, a number of different techniques of data-gathering and analysis were used. The specific research objectives, research design, techniques for collection of data, and evaluation procedures for each separate aspect of the study are more completely described in the sections in which the findings are reported.

Research Objectives

The basic rationale underlying the study was that research activity should be directed toward development of an understanding of the potential of inter-institutional television for the improvement of instruction, and that all objectives and research areas should in some way relate to, or be instrumental to such a goal. The following statement of long-range objectives is an extension of that concept.

Long-term Objectives

1. To determine whether inter-institutional television teaching can be utilized for the improvement of instruction.

a. Can inter-institutional television be used to bring outstanding professors to students who otherwise would not have had contact with these professors?

b. Can inter-institutional television be used so that the outstanding curricular strengths and specialties of each institution can be made available to students at other institutions?

c. Does the use of inter-institutional television effect more economic and efficient utilization of teaching personnel and result in:

released time for television professors
reduced class load for other faculty members
reduction of course duplication among institutions
teaching more students simultaneously than can be done in conventional classrooms or by intra-institutional television
consideration of inter-institutional television as a possible means of combatting future shortages of college and university faculty

d. In what other ways can inter-institutional television be used to improve instruction?

2. To determine whether inter-institutional television results in increased cooperation and communication (free exchange of ideas, etc.) among the participating institutions.

3. To determine to what extent inter-institutional television instruction might extend the influence of the college and university into the community.

The long-range objectives are sufficiently broad that they could not be realized in the initial stages of the project. Pertinent findings, however, are discussed in Chapter IV, General Conclusions.

During the first two years of the research project it was necessary to identify problems associated with inter-institutional television teaching upon which the success of a long-range program would necessarily be based. The systematic research activity during the first two years was directed toward the collection of data in the following areas.

Specific Research Objectives; 1957-59

1. Investigation of the feasibility of inter-institutional television teaching.

This area of research was designed to bring forth data of a varied nature as it related to factors of technical, administrative and financial feasibility.

2. Investigation of the effectiveness of television instruction.

Major attention in this area of research was given to comparative achievement of students in televised classes at the separate participating institutions. It also included comparative studies of conventional and television instruction similar to those that have been carried out on an intra-institutional basis at other institutions.

3. Investigation of student and faculty attitudes toward inter-institutional television teaching, with emphasis directed toward:

a. obtaining an understanding of the basic determinants of attitudes toward inter-institutional television teaching.

b. determining the level of acceptability held by students and faculty for inter-institutional television teaching.

The general research areas indicated above were first developed by Pennsylvania State University as a guide for their *intra*-institutional television research. The areas seem to have general application for television research and were adequate as basic research categories for the Oregon Project. It should be noted, however, that use of these areas was actually an extension of them to another experimental situation and did not imply duplication of the work already done. The basis for differentiation was the fact that the Oregon Project was a study of *inter*-institutional television instruction and, thus, qualitatively different from *intra*-institutional studies completed elsewhere.

The Sample

The subjects for the first year of the study were students in Chemistry, History and Education. The subjects for the second year of the study were students in Chemistry, English Composition and Appreciation of Literature. The courses were offered to students at Oregon College of Education, Oregon State College, the University of Oregon, and Willamette University. The number of receiving campuses for a given course varied from three to four. In most cases the largest number of students were at the State College and the University. In the case of English Composition, however, the largest number was at Oregon College of Education since all of their composition students during the second year of the experiment were required to take the course by television. Tables 1 and 2 present relevant data describing the sample.

Procedures and Evaluation

Inter-institutional television instruction during the first two years was generally carried on as follows: (1) two televised instructional periods each week were received simultaneously by the students at the originating institution and at the other participating institutions, (2) supplementary conventional instruction was given by an instructor from the student's home campus. Variations of this pattern included one situation where the televised instruction was for only an hour each week with two hours of supplementary conventional instruction. In another instance, half hour television presentations were used rather than fifty minute periods. Another variation was the televising of an entire course (History-Spring quarter: Chemistry 1958-59) without supplementary conventional discussion. In most courses there was only one television professor, although frequent use was made of guest speakers and other resource personnel. As a variation, one course was presented by a

Table 1
DESCRIPTION OF COURSES TAUGHT ON INTER-INSTITUTIONAL TELEVISION (1957-58)

Course Title	*Originating Institution*	*Number of Students on each Campus*				*Total Enrollment*	*Time Offered*	*Proportion of TV instruction to conventional instruction each week*
		OCE[2]	*OSC*	*UO*	*WU*			
School in American Life	UO	42	135	243		420	Fall	One 50 minute TV period Two 50 minute conventional discussion[3] periods with on-campus instructor
Human Development	OCE	39	35	198		272	Winter	Two 50 minute TV periods One/two 50 minute conventional discussion[4] periods with on-campus instructor
Educational Psychology: Learning[1]	OSC	16	77	179		272	Spring	Two 30 minute TV periods Two 20 minute discussion periods immediately after TV One/two discussion periods (50 minutes) with on-campus instructor[5]
General Chemistry	OSC	51	123	63	54	291	Fall	Two 50 minute TV periods One 50 minute quiz section with on-campus instructor Two hour laboratory[6]
General Chemistry	OSC	39	101	59	47	246	Winter	Same as fall term.
General Chemistry	OSC	26	83	55	44	208	Spring	Same as fall term.
United States History	UO	54		119	5	178	Fall	Two 50 minute TV periods One 50 minute conventional period with on-campus instructor[7]
United States History	UO	64		117	5	186	Winter	Same as fall term.
United States History	UO	51		91	5	147	Spring	Three 50 minute TV periods

[1] The first three courses listed represent a year's sequence recommended for teacher certification in Oregon.

[2] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University. Totals based on number enrolled at end of course.

[3] At the University of Oregon the discussion sections were taught by graduate assistants, not the TV professor

[4] At the University of Oregon the course structure was arranged so that Growth and Development was a four unit course. At the other participating institutions it was a three unit course.

[5] Same as 4 above—four unit course at University of Oregon.

[6] There was an additional hour of lab. time at Oregon State College. The TV professor taught some of the labs.

[7] At the University of Oregon the TV professor was also the on-campus instructor.

Table 2
DESCRIPTION OF COURSES TAUGHT ON INTER-INSTITUTIONAL TELEVISION (1958-59)

Course Title	*Originating Institution*	*Number of Students on each Campus*[1]				*Total Enrollment*	*Time Offered*	*Proportion of TV instruction to conventional instruction each week*
		OCE[2]	*OSC*	*UO*	*WU*			
General Chemistry	OSC	6	71	50	5	132	Fall	All instruction on TV including laboratory demonstrations. No conventional laboratory or discussion sections. Three 50 min. TV periods; one 30 min. TV period.
General Chemistry	OSC	5	59	40	4	108	Winter	
General Chemistry	OSC		68	39		107	Spring	
Appreciation of Literature	UO	41	85	129		255	Fall	Two 50 minute TV periods;[3] one 50 minute conventional period, with on-campus instructor.
Appreciation of Literature	UO	29	97	131		257	Winter	
Appreciation of Literature	UO	32	96	126		254	Spring	
English Composition	OCE	297	91	94	32	514	Fall	Two 50 minute TV periods; one 50 minute conventional discussion period with on-campus instructor.
English Composition	OCE	240	108	90	32	470	Winter	
English Composition	OCE	210	112	87	32	441	Spring	

[1] Totals based on number enrolled at end of course.

[2] OCE, Oregon College of Education; UO, University of Oregon; WU, Willamette University.

[3] At UO, TV professor was also discussion professor (Condition 1).

team of two instructors. The televised instruction in each instance was considered the independent variable, with achievement, student attitudes and instructor attitudes as the dependent variables. Tables 1 and 2 list the courses and conditions of televised teaching.

The research program had at least three basic elements as indicated previously under Specific Objectives. Determination of data relating to each of these objectives was all based upon the basic vehicle of inter-institutional television instruction as the independent variable. This involved the use of several different techniques of data-gathering and evaluation for the separate sub-areas of research.

The basic techniques used for collection of data and evaluation were as follows:

(1) Evaluations of the feasibility of inter-institutional television were based primarily upon informal and systematic observations by the administrators of the project, reports from participants in the project, and interviews.

(2) The effectiveness of televised instruction was evaluated by comparing achievement among the various experimental groups through use of (a) analysis of covariance; (b) analysis of variance; (c) the t-test.

(3) Determination of student and faculty attitudes was based upon interviews, questionnaires, attitude scales, and controlled observations. IBM equipment was available for analysis of the data. Chi square was the primary statistical technique employed.

Reports of Studies

Feasibility of Inter-Institutional Television Instruction

Technical Feasibility

The experimentation has demonstrated that it is technically feasible to use television as a means of inter-institutional teaching. The televised courses were produced on schedule from studios on both the University and Oregon State College campuses and beamed to the transmitter by microwave relay for broadcast to the several campuses. Reception was excellent in all television-equipped classrooms and at hardly any time during the study was a class inconvenienced by technical difficulties. From an engineering and a technical point of view, there seem to be no basic problems which legislate against reaching several institutions simultaneously with televised courses.

Administrative Feasibility

Administratively, inter-institutional teaching by television is also feasible. Representative faculty members and administrators from the several participating institutions were willing to spend many hours in planning and discussion to reach agreement upon course offerings. Generally speaking, there was consistent cooperation on the part of all staff members who participated in the television project on all campuses. The entire program was organized and successfully carried out as a truly inter-institutional experiment in television instruction.

This does not mean that there were not problems to be overcome in introducing televised teaching, selecting courses and professors, adjusting schedules, establishing common class times, standardizing procedures, and handling many other matters to make them somewhat acceptable to the four different participating institutions. Since some further comment may be valuable to others who might wish to initiate an inter-institutional instructional program by television, a few pages will be devoted to some subjective reactions to the experiment as registered by both the project and the research director. These will be discussed under the general headings of the basic administrative approach, the role of the project director, the role of the television committees on each campus, organization for research and problems of origination and reception. It should be kept in mind when reading of the shortcomings and difficulties here outlined that they did not prevent the development of a very good series of televised courses as well as a generally satisfactory procedure for administration of the whole inter-institutional television teaching program.

Basic Administrative Approach

As previously mentioned, one of the first questions considered in development of the inter-institutional television teaching experiment was the basic administrative approach which was to be used in the introduction of such instruction. The top executives in the Oregon State System of Higher Education agreed early that such a program should not be arbitrarily imposed upon institutions by administrative order. They felt that televised instruction could be developed most effectively by involving and getting support from teaching faculty, and departmental and divisional administrators at participating institutions. An attempt was made, then, to develop the instructional program through a democratic process of discussion, compromise, and group agreement rather than by arbitrary administrative edict.

Negotiations during the first year did reveal some general attitudes on the part of the faculty at the several institutions which made selection of telecourses somewhat difficult. Some staff members wondered why experimentation in television was necessary, some showed certain signs of anxiety lest the introduction of televised courses would unduly disrupt the *status quo*. There seemed to be a feeling of concern and uncertainty regarding the value of television as an instructional tool. Few faculty members knew anything about "educational television" and there seemed to be some lack of interest in searching out television's potential in the teaching of college level courses. When the course offerings were finally agreed upon, however, the departments (except in one instance) and the personnel were all very cooperative in the planning and execution of the chosen telecourses.

Negotiations during the second year of the project seemed to reveal a different attitude on the part of many of the faculty. The climate for experimentation seemed to be much better. There was not as much questioning of whether television teaching should be done. It was more of a question of "who should do it?". This, of course, added to the problems in choosing courses, professors and originating institutions. As a matter of fact, during the second year, the democratic process of choice and agreement of course offerings was not completely successful. It was finally necessary to arrange a conference of the top administrators from each institution and, by executive decision, obtain agreement regarding the courses which were recommended for origination and reception by the various participating institutions.

This indicated the need for top administrative interest and support as well as the need for free and open discussion and negotiation with the department heads and staff.

Just how much support is needed by institutional executives is a question which needs further study and consideration. It is difficult to attain a desirable medium between too little and too much support. Experience in this project tends to show that direct obvious administrative interest in television teaching will be reflected in the attitude of the faculty. If this interest is too pronounced, however, there may be certain fears and resistances to televised teaching set-up in the minds of the faculty. If the administrative interest is slight, or unknown, there tends to be little interest or concern on the part of the faculty. The problem of administrative support of television instruction raises many subtle questions of faculty-administrator relationships which have important implications in the development of a program.

The Project Director

The project director was responsible for setting up the entire program. As indicated previously, he worked primarily through the chairmen of the television committees on the various campuses and, in conjunction with them, negotiated with the presidents, deans, department heads and teaching faculty to get agreement on course offerings among all institutions. Generally, this was a satisfactory arrangement although it was difficult for the director to carry out his many duties to the complete satisfaction of all participating personnel.

The director tried to be available to all individuals, and policy-making boards involved in the television teaching experiment, and to travel quite often to each campus. There was some feeling, however, during the first year of the experiment that not enough time "in residence" was allotted to each institution. This may have resulted from the fact that the director of the project was a staff member at one of the participating institutions, was in residence on that campus and spent part-time in his staff position there, as well as administering the television teaching experiment. This feeling was alleviated somewhat by setting up regular meetings with the television committees on each campus so the project director and the research director could report progress and discuss problems. These were held in addition to the more hurried and more frequent special visits which dealt with specific and individual administrative or operational matters.

In addition to the above responsibility, which involved a good deal of travel, an extensive amount of coordinative activity was channeled through the director's office. He was necessarily concerned with coordinating the activities of the instructional, production and engineering staffs involved in the television teaching program; with planning ahead for origination and reception of other courses; and with reporting to administration at the several institutions and to the State Board of Higher Education. He was also involved in planning and making decisions regarding the research activities which were carried out in evaluation of the project.

Responsibility for these many activities on several campuses stressed the need for an efficient means of communication. Problems often arose concerning the project which demanded various types of group action, considerable consultation with administrators, and decisions which involved personnel at several institutions. Proper communication was necessary among people on a single campus as well as among people on the different campuses. It was of prime importance, therefore, to try to maintain regular channels of communication through which information could be distributed to the various interested parties and which would permit feedback to the administrative staff. Even minor breakdowns in communications seemed to have some effect on the operation of the program, the morale of the staff, and the attitudes of staff and students toward television instruction.

As a result of these first two years of experimentation in inter-institutional television teaching, it would seem advisable that the administrators of such a project should try to maintain communication channels in the following ways:

(1) work directly with the instructional staff at each institution

(2) coordinate the instructional activities among the participating institutions

(3) work directly with the television committees of each institution

(4) coordinate the activities of the television committees among the participating institutions

(5) work directly with the participating departments at each institution

(6) coordinate the departmental decisions and policies among institutions

(7) coordinate registration activities including scheduling of courses, examinations, etc.

(8) coordinate the research project at each institution into an organized program

(9) prepare and distribute regularly to all personnel any written memos, bulletins and reports of progress which will keep interested persons informed.

A breakdown in any of these channels can have serious adverse effects on the entire operation.

Considering the many activities and multiple demands upon the time of the director of such a program, it is probably advisable, at least during the initial stages of the project, to make the position a full-time job. It might also be advisable, when considering a person for the director's position in an inter-institutional operation, to choose someone who has had no previous attachment to any of the participating institutions so there will be no cause for concern among participating personnel that any favoritism will be shown to any particular institution because of present or previous attachment.

The Television Committees

The television committees which were organized on each campus contributed materially to the project. They relayed faculty feeling toward television experimentation, made some institutional decisions regarding policy, investigated possible areas of instruction, and suggested professors for teaching of courses. Committees were composed of teaching faculty from different disciplines which permitted a wide range of reaction to television plans and problems.

The fact that the chairman of the television committee on each campus was given some released time for handling television activities was very helpful. He proved an invaluable contact for the project director as a coordinator and expediter on his own campus. He was able to resolve specific problems and handle administrative details which helped considerably in reducing the time spent in inter-campus travel and group meetings. Excess expenditure of time in travel between campuses and in holding of group meetings is one of the potential dangers of organizing and administering an inter-institutional television program.

It is important to note that the television committee chairman must have full administrative support and free latitude to act in searching out television teaching areas on his campus. He should also have some responsibility in the development of the overall research program, particularly as it relates to his specific institution.

Organization for Research

A basic dimension of the television project was evaluation of the experimental procedures in the research areas (feasibility, effectiveness and attitudes) that were indicated in Chapter II. The evaluation was based on the assumption that the design for the first two years was to be considered a pilot study. Such preliminary, exploratory study had as its purpose the identification of problems and evaluation of procedures that seemed to be significant in terms of the possible development of an extensive, relatively "full-scale" program. A further consideration relative to evaluation was an awareness of the fact that the Oregon Project was unique since it was organized on an inter-institutional basis, whereas most previous television research had been intra-institutional in nature.

To implement the above considerations a research director was appointed who was assigned responsibility for collection and evaluation of data. The research director reported to the project director. Both were regular faculty members at the same institution. The research director was assigned to the television project half-time and to teaching responsibilities for the other half.

The organization for research and the gathering of significant data developed most satisfactorily. Several factors seemed to indicate, however, that the research program might have been strengthened by some modification in its organization.

Experience with administering the research program would indicate that, during the initial stages at least, responsibility for directing research should be a full-time rather than a part-time position. The research director had to be involved in active participation with television committees, television professors, administrative officials, and regular staff members at the participating institutions. Such responsibility required much more traveling and coordinative activity than was possible on a half-time arrangement.

A second factor was that the research program did not seem to be interpreted adequately to the television committees and staff members of the participating institutions. Some faculty members felt that the television research personnel should have been able to manipulate experimental conditions at will, in consistence with a previously laid out design. There was some lack of awareness that experimentation was in part a function of administrative factors; that once a course had been set up on an inter-institutional basis, experimental manipulation was necessarily limited. There was some lack of understanding of the program in its overall context, and of the general importance of the broad areas of research as well as the importance of specific data gathering techniques. Such factors as these, indicated a need for a more adequate distribution of information concerning the general and specific aspects of the program on each campus.

Finally, during the first phase of experimentation there was not enough real involvement in the research activities by the individuals at the separate campuses. This lack may have created some feeling that the research program was the responsibility of an outside agency or institution rather than being the mutual responsibility of all participating institutions.

An efficient way of expediting research would be the development of an independent, self-sustaining research program on each campus; one in which the television committees and interested faculty members are able to emphasize those basic elements of research that might be quite unique to their respective campuses and in which the research director would then integrate the individual studies into an overall framework.

In future research, an integrated program may best be attained if the position of the research director is defined, in part, as a consultant to guide and assist in the development of individual studies on each campus. The separate studies should be arranged so that the researchers can publish them independently in addition to having their data and conclusions presented in the total report of findings. A very productive way of facilitating the research program is to involve graduate students at the masters' and doctoral levels. In the Oregon Project, a doctoral dissertation and masters' theses provided the project with some highly significant data.

That research which involves overall inter-institutional comparisons should be carried out by the research director. This would include studies of comparative achievement, attitudes, feasibility, and any other factors that are specifically inter-institutional.

Probably the most satisfactory way to implement such a program would be to develop an inter-institutional research council. The council should probably operate under the leadership of the research director. He would have the responsibility for coordinating the independent activities on each campus into a systematic, integrated research program, however, all members of the research council should have responsibility for conceptualizing and initiating research ideas. Council members can best determine the basic research areas that seem most appropriate for their respective campuses. Most important of all, they can explain and interpret the overall research program to the faculty at their respective institutions which would overcome some of the problems of communication and understanding indicated previously. A research council, with representatives from each participating institution, would do much to demonstrate that the project is in essence an inter-institutional endeavor.

Problems of Origination and Reception

The problems associated with origination and reception of televised courses on an inter-institutional basis were probably the most serious of the entire program. Comparatively few schools and departments seemed to be interested in experimenting with television instruction. In several cases when there was an interest expressed by someone in a department, there were other departmental factors which precluded participation. Many subject areas were considered by faculty members to be unadaptable to televised instruction, and consequently, there was little possibility of experimentation in those areas. Some were reluctant to participate, or to continue experimentation because they felt that the department had no direct need of the medium or that its use might result in technological unemployment by displacing already established teachers.

There was one instance in planning for the first year of televised instruction where one department at one institution exercised its option *not* to participate. In presenting their objections, they outline so typically the kind of arguments registered against the use of television for instructional purposes, that it might be worthwhile to include that statement here:

> "The history department, after long and serious consideration, unanimously decided to decline the invitation to participate in the proposal to teach United States history by inter-campus television.
>
> "We met with the director of the television project at a luncheon meeting in the fall, when he outlined the proposal and extended an invitation to participate in the program. After a considerable study of the literature available on the subject and after several departmental meetings, we met with him again and spent two hours explaining our reasons for believing the proposal not suitable for our institution.
>
> "At a subsequent departmental meeting a formal motion to decline the invitation to participate in the proposal to teach United States history by inter-campus television lectures was put to the vote and unanimously carried.
>
> "As we explained to the project director we have a special situation at our school in that the great majority of our students do not generally take more than one course in history, which may be the only social science course they take at all. Therefore we feel a deep responsibility to present a broadly conceived course, and one in which there is an abundant opportunity for questions and discussion in the class sessions. We believe that it is especially important to make a contribution through the teaching of our history courses to the development of critical attitudes on the part of our students. Our ideal is to develop a student who, even though his major interest is in a professional or technical field, can use the materials of history as a stimulus to critical and analytical thinking. We do not think that this ideal can be realized through the use of the remote medium of television, where the intimate, immediate, and personal involvement of student and teacher is lost.
>
> "For the above and the following reasons we declined the invitation to participate in the proposed program:
>
> 1. Immediate Considerations
>
> A. Educational
>
> 1. The television picture is inevitably inferior to the living contact of teacher and students in the classroom.
>
> 2. The students are unable to "get at" the lecturer in discussion sessions
>
> a. It seems indefinitely more desirable to have discussion led by the original lecturer at the moment when such class participation is most pertinent.
>
> 3. Uniformity of textbooks, examinations, and lectures is not desirable. Uniformity destroys the critical and creative spirit.
>
> 4. The TV program as proposed is not a "visual aid" in the accepted term, but is a substitution for classroom instruction.
>
> B. Administrative
>
> 1. Our history department has inadequate personnel to administer this program.
>
> a. We have no graduate students to monitor the televised lectures or to lead the discussion sessions.
>
> b. We do not have any undergraduate major students upon whom to call for such services.
>
> 2. Long-range Objectives
>
> A. Professional
>
> 1. The TV program will reduce all instructors, with the exception of the lecturer giving the course, to the role of a technical assistant: a discussion leader for another man's lecture; a quiz giver; a roll checker; a maintainer of discipline.
>
> 2. The consequence of this reduction of the instructor's status will reduce the attractiveness of the profession.
>
> a. Scholars will turn away from historical research and history teaching.
>
> b. This will bring about a disastrous diminution in the graduate schools of the future.
>
> B. Authoritarian
>
> 1. The "master teacher" who delivers the lectures may well become the exclusive, accepted, official authority in the particular field.
>
> a. Against him no alternative or dissenting points of view or interpretations could be voiced.
>
> 2. This official authority might well be extended over an entire state, conceivably over an entire region, or even over the nation.
>
> a. Thus there might easily be created a single great channel of official instruction and indoctrination.
>
> C. Pressure Groups
>
> 1. The proposal to telecast the lectures over an 'open circuit' creates the opportunity for listening in by outside persons or by groups who may become self-appointed critics and censors, wielding or attempting to wield pressure upon the lecturer. It would give pressure groups an opportunity to try to impose their distinctive view points on both the lecturer and administrators of the program."

This statement, with but minor editorial changes, was submitted by one department but it seemed typical of the opinion of many faculty members. If circumstances had been but changed a little, this same type of statement could have emanated from any of several departments. It is outlined here to point up the fact that one of the major problems in initiating an experimental program in televised instruction lies in a genuine conviction on the part of much of the faculty that televised teaching will unduly complicate the established educational patterns and will inevitably prove inferior in quality. There is no intention either to condone or condemn the statements made but rather to point out the type of reaction with which one is confronted when moving into experimentation in televised instruction.

There was a marked tendency, particularly among the two larger institutions participating in the project, to prefer to originate a course rather than to receive it. This created a situation in which sort of a precarious balance had to be developed among institutions and within subject areas and departments. This precarious balance was not always maintained in the effort to organize a televised instructional program. To cite but one example; one institution suggested a course offering and indicated that an outstanding professor in the field was willing to teach it .When this was discussed with other institutions, it was discovered that one of the other institutions also had a professor who was considered an outstanding teacher. It was then suggested that the course (which was a one term course) be taught two terms each by first one and then the other professor. Negotiations were carried on in meetings which included the deans of the schools, the teaching personnel, and the chairmen of the television committees from the institutions. It was agreed in such conference that an outstanding professor from each of the two larger institutions would share the television teaching time equally since this would permit each of the larger departments to profit by the experience of both origination and reception of a televised course. At the next planning session set up for determining course method and content, however, one of the institutions decided it would participate only if the professor from their institution were to teach the course for the entire year. The other larger institution would not consent to this arrangement and the course was cancelled. This is but one example of the problems which seem to be related to origination or reception of televised courses.

The departments on each campus generally felt that members of their staff were as good, or better than, the staff in a comparable department on another campus and that they should have been called upon to originate a course rather than to receive one. In some cases, origination was based somewhat upon the fact that a particular institution had been allocated major work in certain areas in the division of instructional responsibility which characterizes the Oregon State System of Higher Education. Some departments were concerned about merely receiving a televised course lest this would militate against their professional status as a department and lessen their prestige. There are certainly a number of intangible factors of status and prestige which are confounded with origination or reception of televised courses on an inter-institutional basis.

Since the inter-institutional televised instruction was on open-circuit broadcast and could be viewed by the general public as well as by people on all four campuses, there was also some concern regarding the promotional effects of the project. Some of the faculty felt that those individuals (and their institutions) who originated courses received undue publicity and prestige by engaging in television teaching.

These comments on some of the problems of setting up a program of inter-institutional televised instruction are not outlined to discourage others from initiating a similar program. They merely point out some of the difficulties which were met along the way. It should be reiterated that there was real interest and cooperation on the part of television professors, their department heads, the television committees, the administrative heads of the institutions, and all operational personnel in producing quality courses by television when all were finally agreed upon the particular courses which were to be broadcast.

Financial Feasibility

It is difficult to determine the financial feasibility of inter-institutional televised teaching at this stage of development. The initial phase of the project was an expensive one for the State System of Higher Education in the purchase and installation of equipment, although this expense should be considered as a capital outlay as is the construction of a classroom building and not prorated against cost-per-student-instruction. It is true that the limited and experimental nature of the project has not permited total application of televised instruction to courses on all campuses and has not, therefore, reached enough students nor released enough instructors to allow a savings in instructional cost. The addition of trained personnel to handle production, direction and research aspects of the project has been underwritten largely by the generous grant from The Fund for Advancement of Education. The problem of absorbing these personnel into the State System of Higher Education budget is of a critical nature unless course offerings are expanded to permit substantial savings in instructional cost. The whole area of finances is one which needs more study and one in which more specifics will be revealed with continued experimentation in inter-institutional teaching by television.

Effectiveness of Television Instruction

Research Objectives

One of the primary objectives of the Inter-institutional Television Teaching Project was to evaluate the relative effectiveness of television instruction. In evaluating effectiveness two basic areas were investigated. They involved

inter-institutional comparisons **of student achievement and comparisons of student achievement in** ***television sections*** **and** ***conventional control sections.***

1. The inter-institutional comparisons of student achievement were designed to obtain data relevant to the following questions:

a. Are there any differences in achievement between students at the ***originating institution*[1] and students at the** ***separate receiving institutions*** **associated with the following conditions?**

Condition 1: Television lectures received simultaneously by students on all campuses. ***Discussion sections on originating campus conducted by television professor;*** **discussion sections on receiving campuses conducted by home-campus staff.**

Condition 2: Television lectures received simultaneously by students on all campuses. Discussion sections on originating and receiving campuses conducted by home-campus professor: ***television professor does not conduct discussion sections.***

Condition 3: Television lectures received simultaneously by students on all campuses; course entirely by television, ***no supplementary discusison or lab sessions.***

b. Are there any differences among the ***separate receiving*** **institutions in the achievement of students taking an inter-institutional television course?**

2. Comparisons of student achievement in television and conventional-control sections were directed toward the following question:

a. Are there any differences in achievement between students who receive a course by ***television instruction*** **and students who take the course in** ***conventional-control sections?***

The rationale underlying the inter-institutional comparisons is that the students on the receiving campuses had virtually no access to the television professor; students on the originating campus, although taking the course by television, could have had some access to the television professor. This presumably could have had an effect on achievement. Furthermore, there may have been some factors of institutional differences in philosophy, emphasis, and objectives of each course. It is plausible to assume that the frame of reference of the television professor in his own institutional setting might have been quite different from the orientation of the professors on the receiving campuses. These and other differences could have operated to the benefit of students on the originating campus and to the disadvantage of the students at the receiving campuses.

The comparisons of achievement between televised and control sections were an extension of the testing that has been made in other television research projects, particularly Miami University in Ohio and Pennsylvania State University. In the Oregon Project two control conditions were set up for this purpose. One was in Chemistry in which televised and control sections were set up for the entire year on the home campus of the television professor. The other was in Human Development, in which there was also a control section on the television professor's home campus. A further test of this question was also made in Educational Psychology: Learning but with some lesser degree of control over some of the variables.

Criteria for Evaluation of Achievement

The basic criteria for the comparisons of achievement were the achievement tests administered during and at the end of each course. In most cases the tests were constructed by the television professor. In Human Development and Educational Psychology: Learning, however, items were contributed by all of the participating staff members and the examinations were constructed from the pool of items. The final examination in Chemistry during the Spring quarters was the American Chemical Society and Cooperative Examination.

The tests used in the three Education courses were objective. In Chemistry, objective tests were used with the exception of the first two, and here, in one section, partial credit was given by instructors for solution of problems. Essay type examinations were used in History and English Literature. Careful steps were taken by the scorers to set up criteria for grading which would increase the reliability and objectivity of the scoring. No comparative studies of achievement were carried out in English Composition because of the difficulty in setting up adequate evaluation instruments. The characteristics of some of the examinations are in Table 3 and the courses in which they were given are described in Tables 1 and 2.

The primary basis for item selection in the achievement tests was the fact that the item represented a concept that had been dealt with on television. Every effort was made to exclude from examinations that content which may have been unique to a particular class.

Methods of Analysis

The methods of analysis used were primarily analysis of variance and analysis of covariance. Scores on the American Council on Education Psychological Examination or the Ohio Psychological Examination were used as the initial adjusting variable where analysis of covariance was used. In those tests in which there were no differences among the groups on initial ability as measured by the ACE or Ohio Psychological Examinations, simple analysis of

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[1] Originating institution refers to that institution at which the television professor was a staff member and from which the telecourse originated. Receiving institution refers to those institutions which received telecourses taught by a professor from another institution.

Table 3

DESCRIPTION OF REPRESENTATIVE EVALUATION INSTRUMENTS

Course	*Scoring*	*Items*	*Estimate of Reliability*[1]
School in American Life	Objective	26 multiple-choice 75 true-false	.96
Human Development Final	Objective	67 multiple-choice 24 matching 29 completion	.85
Educational Psychology: Learning	Objective	45 multiple-choice	.76
Chemistry Spring midterm	Objective	multiple-response 106 points	.67
Spring Final (American Chemical Society Test in General Chemistry—1958 Form)	Objective	multiple-response 100 points	.936[2]
U. S. History Winter Final	Essay	100 points	.93[3]

[1] Pearson Product Moment; Spearman-Brown Correction for Attenuation.
[2] Kuder Richardson Formula No. 21.
[3] Inter-correlation among scorers.

variance or the t-test was used to determine significance of differences. The t-test was also used following a significant F to test differences between two groups. The .05 level of significance was accepted as the criterion of significance. All tests in which the obtained difference was equal to or exceeded the adopted criterion were marked with an asterisk.

Problems of Evaluation

The evaluation was sometimes limited because of decisions regarding organizational and instructional factors. Already mentioned is the fact that experimental manipulation was necessarily restricted once a course had been set up on an inter-institutional basis. Altering the experimental conditions to permit the immediate testing of questions and hypotheses that seemed to emerge from the instructional situations was not possible. It seems reasonable to assume, however, that limitations would be found in the initial phases of any project requiring as extensive and complex an organization as the Inter-institutional Teaching Project.

The limitations notwithstanding, in the three basic research conditions involving inter-institutional comparisons, there was some degree of randomization of instructor and course variables. At least two professors and two courses were involved in each condition, however, some replication of the studies must be carried out before substantial generalizations can be made. This is being planned in future research in the continuation of the Oregon Project.

A factor which somewhat limited the evaluation program was the instructional pattern set for the courses, which included television instruction combined with face-to-face instruction (quiz sections, discussion sections or labs) on the students' home campus. The face-to-face instruction was intended to be related as closely as possible to the televised instruction. This pattern of instruction was adopted because, without such supplementary instruction, the students at the receiving campuses would not have had personal contact with any one who was connected with the instruction of the course. This seemed to put too much responsibility on the student at the receiving campus. Also it was thought that such involvement would permit better inter-institutional participation and adjustment by the instructional personnel.

The combination of television and conventional instruction introduced some variables that were impossible to control experimentally. One of these variables was a time factor. Some institutions had a larger proportion of home-campus discussion time within the same course than did other institutions.

Another variable was related to qualitative differences among instructors teaching the discussion sections. For the most part, it can be assumed that the quality of instructors was randomized. In some situations, however, graduate students were used to teach the sections on one campus and regular staff members taught sections on other campuses.

Differences among the attitudes of the various on-campus discussion instructors was also a difficult variable to control. It seems reasonable to assume that instructor attitude had some relationship to the motivation and achievement of students although this assumption has not been completely demonstrated. The primary means of attempting to control these variables was to construct tests which were based upon televised material only. During the next phase of the research the basic instructional form will be a self-contained television course without supplementary instruction. This modification in the instructional pattern will have the effect of minimizing many of the variables here mentioned. In addition, future study will be made of the effects of several variables which were in part uncontrolled during the initial phases of the experimentation.

An important factor affecting evaluation was the degree of heterogeneity of student populations among campuses. The data showed substantial differences in scholastic ability among some of the student populations enrolled in the television courses on the various campuses. These were sufficiently extensive that the achievement data were analyzed by analysis of covariance with initial scholastic ability as the controlling variable. In contrast, typically there were no statistically significant differences in ability between the control sections on a single campus. It is reasonable to assume that such differences in intelligence among the various groups could have some effects on course outcomes. There was some evidence to indicate that heterogeneity in ability among the campuses affected the attitudes of the students at the receiving campuses.

A decision about pre-tests, made prior to the beginning of instruction by the instructors and representatives of the television committees on the various campuses, had important implications for the research program. It was decided that pre-tests in subject areas should not be given to the students in the television sections, and that an initial scholastic aptitude test should be administered only to the students entering courses in the fall term. The rationale for the decision was that excessive testing might operate to affect student attitudes negatively. In addition, it was felt that the administration of initial tests for purposes of equating groups would add considerably to the multitude of administrative details that were necessitated by the inter-institutional aspect of the program. The implications of such a limitation on testing were potentially significant since different entrance examinations were used at the two major institutions, and data on the subjects' ability were not readily available. During the course of the research the decision was modified and most students were given tests of scholastic aptitude. Because the tests had to be administered in separate group sessions at the different campuses, scores were not obtained for some students. There is no reason to believe that any systematic bias or selective factor operated which could have affected the results.

An important consideration in any evaluation of televised instruction must be the quality of the criterion instruments used to compare experimental and control groups. The regular achievement tests administered during the course are usually used as criterion instruments to evaluate television instruction. A common criticism of such criteria, is that achievement tests typically used during a course do not measure some of the more important outcomes of education To the extent that this is true, then, evaluations of televised instruction are necessarily incomplete. Such a point of view has some validity and would be agreed upon by many, including the personnel of the Oregon Project. Yet it must be pointed out that these very same instruments are used to measure outcomes of instruction in conventional classes, are used as a basis for assigning grades in such classes and, as such, must be considered valid to the same extent for television. A necessary part of any television research program, however, should be to search continually for different and more adequate measuring techniques.

Presentation of Findings

This section will present the data relative to the effectiveness of televised instruction as outlined under Research Objectives, Chapter II.

Inter-institutional Comparisons of Student Achievement

a. Are there differences in achievement between students at the originating institution and students at the receiving institutions associated with the following conditions?

CONDITION 1: Television lectures received simultaneously on all campuses. Discussion sections on originating campus conducted by television professor; discussion sections on receiving campuses conducted by home campus staff.

DISCUSSION: *Condition 1.* Table 4 shows the comparative scores of U.S. History students for the fall and winter terms. The t-test was used to determine significance of differences in achievement since comparability of sections during fall term was shown by measures of scholastic aptitude. The composition of the groups may have changed during the winter and spring terms since there was considerable shifting in and out of the television sections. However, on the assumption that there were no differences in ability (an assumption that seemed warranted by the fall data), the winter data were also tested for significance by the t-test.

Table 4

SUMMARY OF COMPARATIVE SCORES AMONG TELEVISED SECTIONS

UNITED STATES HISTORY

Institution	*Exam No.*	*Course Examination Mean*	*SD*	*N*	*t-ratio*
OI[1]	Fall	77.12	9.80	117	.76
RI		75.96	7.99	54	
OI	Winter	78.21	10.36	115	
RI		72.88	9.24	64	3.42*

[1] OI indicates Originating Institution; i.e., the institution at which the television professor was a staff member. RI indicates Receiving Institution: i.e., those institutions which receive telecourses taught by a professor from another institution.

* Significant beyond the 5% level.

There was no statistically significant difference in achievement during fall term on the basis of a total average score. During winter term the students at the originating institution achieved at a significantly higher level than the students at the receiving campus.

Table 5

SUMMARY OF COMPARATIVE SCORES AMONG TELEVISED SECTIONS

EDUCATIONAL PSYCHOLOGY: LEARNING

Institution	*Exam No.*	*Course Exrmaination Mean*	*SD*	*N*	*t-ratio*
OI[1]	Spring final	30.45	4.60	77	.40
RI		30.72	4.34	105	

[1] OI, Originating Instittuion: RI, Receiving Institution.

Table 5, which reports on Educational Psychology: Learning shows that there was no significant difference in achievement on the television portion of the final exam between the students at the originating institution and students at the receiving institution.

Tables 6 and 7 show the results of examinations for students taking Appreciation of Literature by inter-institutional television. Table 6 indicates that the students at the originating institution scored at a significantly higher level than the students at the receiving institution during fall term and in the first mid-term of winter term. In the remainder of the tests there were no statistically significant differences among institutions.

Table 7 shows no differences between students at originating and receiving institutions for the fall term; significantly higher achievement by students at the originating institutions for the winter term, and an irregular pattern during spring term.

Table 6 shows an interesting pattern in which the differences occurred during the first four tests but with no statis-

Table 6

SUMMARY OF COMPARATIVE SCORES AMONG TELEVISED SECTIONS

APPRECIATION OF LITERATURE

Institution	Exam No.	Course Examination		Analysis of Covariance				
		Adj Mean	N	Source	Adj. SS	df	V	F
OI[1]	Fall Mid-Term (1)	67.58	101	Between	1150.90	1	1150.90	8.18*
RI		60.98	36	Within	18846.10	134	140.64	
				Total	19997.00	135		
OI	Fall mid-Term (2)	65.86	101	Between	2278.74	1	2278.74	14.46*
RI		56.48	35	Within	20964.31	133	157.63	
				Total	23243.05	134		
OI	Fall final	69.60	101	Between	1865.27	1	1865.27	18.01*
RI		61.02	34	Within	13666.96	132	103.54	
				Total	15532.23	133		
OI	Winter mid-term (1)	68.21	81	Between	2511.56	1	2511.56	12.32*
RI		57.03	27	Within	21413.92	105	203.94	
				Total	23925.48	106		
OI	Winter-mid term (2)	58.86	79	Between	0.16	1	0.16	0.00
RI		58.78	26	Within	20129.29	102	197.35	
				Total	20129.45	103		
OI	Winter final	73.69	81	Between	351.62	1	351.62	3.63
RI		69.39	25	Within	9986.60	103	96.96	
				Total	10338.22	104		
OI	Spring mid-term (1)	51.49	79	Between	54.31	1	54.31	0.56
RI		49.87	29	Within	10269.21	105	97.80	
				Total	10323.52	106		
OI	Spring mid-term (2)	39.90	78	Between	54.61	1	54.61	0.77
RI		41.53	29	Within	7344.70	104	70.62	
				Total	7399.31	105		
OI	Spring final	38.24	75	Between	27.61	1	27.61	0.72
RI		36.71	29	Within	3887.29	101	38.49	
				Total	3914.90	102		

[1] OI, Originating Institution; RI, Receiving Institution.

[2] Ohio Psychological Exam Scores were used as the adjusing variable.

* Significant beyond the 5% level.

Table 7

SUMMARY OF COMPARATIVE SCORES AMONG TELEVISED SECTIONS

APPRECIATION OF LITERATURE

Institution	Exam No.	Course Examinations			
		Mean	SD	N	t-ratio
OI[1]	Fall	68.04	9.02	130	1.80
RI		64.91	12.10	42	
OI	Winter	70.56	11.24	129	2.88*
RI		64.93	12.39	48	
OI	Spring mid-term (1)	50.22	10.47	116	1.27
RI		47.86	9.89	42	
OI	Spring mid-term (2)	39.63	8.77	112	.12
RI		39.82	9.14	39	
OI	Spring final	37.79	5.99	112	2.85*
RI		34.51	6.70	39	

[1] OI, Originating Institution; RI, Receiving Institution.

[2] A mean ACE score was computed on students for whom scores were available. Lack of difference in ACE mean of the sample was used for inferring equivalence of groups on scholastic ability. As a check, the sample for whom ACE scores were available were tested for differences in achievement. The tests of significance follow the same pattern as the t-ratio above which was computed on the entire group.

* Significant beyond the 5% level.

tically significant differences in the last five tests. This might have implications in terms of student familiarization with the basic teaching methods of the professor. In Table 7, however, the statistically significant differences seem to be more randomized. Selective dropout did not seem to be a factor.

The data tentatively indicate an advantage operating in the favor of students at the originating institution ***under this condition***, that is, where the television instructor also conducts discussion sections on his own campus. It is plausible to assume that in the home-campus discussion period the additional contact with the television professor enables the students at the originating institution to obtain better ideas of possible areas of examination as well as an extension of the ideas of the television professor. Students at the receiving institution would not have this advantage and, consequently, they may achieve at a lower level.

It should be pointed out that these data are based upon essay (subjective) examinations. Every effort was taken to insure that there would be no systematic bias operating to the advantage of any group. Inter-correlations among readers were satisfactory. Nevertheless, in a period of two years, it is quite possible that there could be sufficient lack of control over examinations to permit bias and halo effect to operate. Certainly reliability research on essay exams indicate their limitation.

A further factor is that of motivation. There is some evidence that the degree of motivation was different among the students at the various institutions due to factors which have hitherto been uncontrolled; factors such as discussion instructor attitude and extra-class help. To the extent that there is a real existing difference, differences in achievement might be logically explained on the basis of differential motivation. A basic question that must be raised is whether differential motivation must be part of inter-institutional television instruction under this condition, or whether it happens to have existed in these particular experiments because of the lack of control over various aspects of the instructional program. The latter seems most plausible on the basis of existing evidence. The pattern of differences in Table 6 seems to indicate that some subtle factors were operating to affect less control of the condition than is experimentally desirable.

It is important to point out that the effect of the variables discussed above limit the generalizations which can be made relative to this condition as it applies to inter-institutional televised teaching. Further experimentation is needed on this condition as it affects television instruction.

> *Condition 2.* Television lectures received simultaneously by students on all campuses. Discussion sections on originating campuses conducted by home-campus professor; television professor does not conduct discussion sections.

Table 8

SUMMARY OF COMPARATIVE SCORES AMONG TELEVISED SECTIONS OF EDUCATION

SCHOOL IN AMERICAN LIFE

Insti-tuition[1]	Course Examination Exam No.	Adj. Mean	N	Analysis of Covariance Source	Adj. SS	df	V	F
OI	Final	78.59	191	Between	222.99	2	111.50	2.34
RI$_1$		80.49	83	Within	14747.50	309	47.73	
RI$_2$		78.25	39	Total	14970.59	311		

HUMAN DEVELOPMENT

Insti-tution	Exam No.	Course Examination Unadj. Mean	SD	N	t-ratio
OI	Winter midterm	33.60	5.34	39	
RI$_1$		32.11	4.74	196	1.76
RI$_2$		33.43	5.36	35	.14

Insti-tution	Course Examination Exam No.	Mean	N	Analysis of Variance Source	SS	df	V	F
OI	Winter Final	90.47	38	Between	225.96	2	112.98	1.40
RI$_1$		92.49	198	Within	21595.00	268	80.58	
RI$_2$		93.94	35	Total	21820.96	270		

[1] OI, Originating Institution; RI, Receiving Institution.

DISCUSSION: *Condition 2.* Table 8 includes the scores for the various sections in the Education course sequence. These are courses recommended for teacher certification. They are not a strict sequence, and consequently, the students enrolled in the fall term are not necessarily the same individuals as those enrolled in the subsequent courses. Analyses of the fall term were based upon the scores of those students for who ACE Psychological examination scores were available. There were no statistically significant differences to the criterion level between the originating and receiving institutions in any of the examinations in the Education courses.

Table 9 includes the Chemistry scores for the first year of

Table 9

SUMMARY OF COMPARATIVE SCORES AMONG TELEVISED SECTIONS, 1957-58

GENERAL CHEMISTRY

Insti-tution	Course Examinations Exam No.	Adjusted[3] Mean	N	Analysis of Covariance[1] Source	Adj. SS	df	V	Differences between OI and RI's[2] F	t-ratio
OI	Fall Midterm	74.98	120	Between	1,167.03	3	389.01	2.19	
RI$_1$		73.48	49	Within	47,062.06	265	177.59		
RI$_2$		71.39	53	Total	48,229.09	268			
RI$_2$		77.98	48						
OI	Fall Final	66.55	121	Between	1,822.33	3	607.44	3.46*	
RI$_1$		67.86	49	Within	45,821.48	261	175.56		.58
RI$_2$		69.00	50	Total	47,643.81	264			1.10
RI$_3$		73.99	46						3.19*
OI	Winter Midterm	62.83	93	Between	1,953.54	2	976.77	6.67*	
RI$_1$		55.81	43	Within	24,765.13	169	146.54		3.13*
RI$_2$		56.33	37	Total	26,718.67	171			2.75*
OI	Winter Final	64.74	94	Between	1,829.33	3	609.78	2.71*	
RI$_1$		62.60	43	Within	45,708.79	203	225.17		.77
RI$_2$		61.31	35	Total	47,538.12	206			1.15
RI$_3$		70.58	36						1.97
OI	Spring Midterm	57.67	79	Between	2,208.72	3	676.24	5.96*	
RI$_1$		50.64	44	Within	20,294.06	179	113.37		3.48*
RI$_2$		57.56	25	Total	22,322.78	182			.04
RI$_3$		58.84	36						.54
OI	Spring Final	41.23	78	Between	3,246.88	3	1082.29	6.88*	
RI$_1$		36.33	44	Within	27,532.62	175	157.33		2.06*
RI$_2$		45.55	23	Total	30,779.50	178			1.47
RI$_3$		48.61	35						2.85*

[1] Analysis of covariance is carried out among the four institutions prior to testing differences between individual pairs.
[2] t-tests are made between OI (originating institution) and the respective RI (receiving institution) after which the t-ratio is reported.
[3] ACE Examination scores were used as the adjusting variable.
* Significant beyond the 5% level.

inter-institutional televised instruction. The criterion instruments are the midterm and the final examination for each term. A description of some of the examinations is given in Table 3. Adjusted scores are used which take into consideration initial differences in ability as measured by the ACE Psychological examinations.

Out of seventeen tests of significance there were four experimental results in which the students at the originating institution scored significantly higher than the students at the receiving institutions. There were two experimental results in which higher achievement at the receiving institutions was significant beyond the 5% level. In a third instance, the t-ratio approximated the 5% level. The remainder of the tests indicated no statistically significant differences between the originating and the receiving institutions.

Inspection of the data indicates that the attained F's in the winter and spring terms, compared to fall term, may have been affected by "selective dropout" at the originating institution. Such dropout would probably have had the effect of increasing the value of F since there is reason to believe that the dropout was mostly of those individuals who had obtained poor grades during the fall term. It may be that the higher score attained by the originating institution in four cases during winter and spring terms are a function, in part, of this selective dropout rather than the fact that instruction originated on that campus. The evidence does not tend to indicate that the students at the originating institution have an advantage that is reflected in higher achievement under the condition tested.

Table 13, which shows the comparative achievement of televised and conventional control sections at the same institution, is also relevant to the question of inter-institutional differences in achievement. There was only one statistically significant difference in achievement out of six examinations given. It can thus be reasoned that achievement at the receiving institution is generally equal to that of either televised or conventional instruction at the originating institution.

Condition 3. Televised lectures received simultaneously by students on all campuses; course entirely by television, no supplementary discussion or lab sessions.

Table 10
SUMMARY OF COMPARATIVE SCORES AMONG TELEVISED SECTIONS
UNITED STATES HISTORY

Institution	*Exam No.*	*Course Examination Mean*	*SD*	*N*	*t-ratio*
OI[1]	Spring	79.10	8.65	89	1.95
RI	midterm	76.02	8.89	47	
OI	Spring	79.59	8.62	88	3.62*
RI	final	74.16	8.23	50	

[1] OI, Originating Institution; RI, Receiving Institution.
* Significant beyond 5% level.

DISCUSSION: *Condition 3.* In Chemistry on the three major final examinations there were no statistically significant differences in achievement between students at the originating institution and students at the receiving institution, although the numerical differences seemed consistently to favor the students at the originating institution. On the weekly examinations, when totalled and tested for differences between groups, the students at the originating institution achieved at a statistically significantly higher level than the students at the receiving institution. The latter must be interpreted very cautiously, however, in view of the fact that the reliability of the weekly quizzes is lower than the reliabil-

Table 11
SUMMARY OF COMPARATIVE SCORES AMONG TELEVISED SECTIONS, 1958-59
CHEMISTRY

Instructor	*Course Examination Exam No.*	*Adj. Mean*[2]	*N*	*Source*	*Adj. SS*	*Analysis of Covariance df*	*V*	*F*
OI[1]	Fall	84.65	71	Between	189.86	1	189.86	6.59*
RI	Midterm	81.79	39	Within	3,084.80	107	28.83	
	Total			Total	3,274.66	108		
OI	Fall	72.94	71	Between	34.06	1	34.06	.18
RI	Final	71.74	39	Within	19,787.64	107	184.93	
				Total	19,821.70	108		
OI	Winter	81.26	60	Between	201.54	1	201.54	4.97*
RI	Midterm	78.19	36	Within	3,773.76	93	40.58	
	Total			Total	3,975.30	94		
OI	Winter	78.39	59	Between	841.33	1	841.33	3.74
RI	Final	72.10	36	Within	20,704.22	92	225.05	
				Total	21,545.55	93		
OI	Spring	83.17	65	Between	1,122.17	1	1,122.17	18.44*
RI	Midterm	76.09	37	Within	6,023.50	99	60.84	
	Total			Total	7,145.67	100		
OI	Spring	39.01	65	Between	433.53	1	433.53	3.12
RI	Final	34.62	37	Within	13,738.80	99	138.78	
				Total	14,172.33	100		

[1] OI, Originating Institution; RI, Receiving Institution.
[2] ACE Examination Scores were used as the adjusting variable.
* Significant beyond 5% level.

ity of the end of term examinations. The weekly quizzes are probably more susceptible to the influence of extra-class assistance and inadvertent hints from the home-campus teaching personnel. There is probably a relationship between success on these quizzes and factors of motivation which induce students to keep up with their day-by-day classwork.

In History, achievement was generally higher at the originating institution than at the receiving institution. Differences were statistically significant in one instance and approximated the criterion level in a second instance. Here again, however, factors of motivation must be considered. There is evidence indicating that motivation at the receiving institution may have been influenced by certain inter-personal relationships in the classroom.

At first glance the data tentatively suggest an advantage in achievement for students at the originating institution. Such an advantage might conceivably be explained by the fact that the television professor was available for conference on the originating campus in spite of the fact that he was not teaching the class face-to-face. Before such a generalization can be made, however, certain uncontrolled conditions must be pointed out.

A basic assumption of this televised teaching condition was that an individual would be available on the receiving campus to answer questions concerning course content. This was meant to be extra-class assistance since there were no supplementary discussions or lab sessions set up. Comments from students and instructors seem to indicate that there were uncontrolled differences in extra-class assistance; sufficiently so that considerable caution must be observed in interpretation of the statistical results. The differences in extra-class assistance and direct involvement by the discussion instructor on the receiving campuses seemed to have significant motivational effects. The fact that the instructor on the receiving campus was to be available primarily for extra-class assistance was not completely understood by many students. Consequently, they inferred a lack of interest by the home-campus instructor which might have had some effect on their motivation to achieve. Although it is hypothesized that motivational factors affected student achievement, it did not seem to affect negatively student acceptance of the course. Students indicated a very high level of acceptance for the televised Chemistry course.

It should be reiterated that the data suggest tentatively, that differences in achievement can be accounted for by lack of controlled conditions rather than the fact of inter-institutional instruction. This condition will be the subject of extensive research during the next phase of the study with stricter control over the factors of extra class assistance and attempts to motivate.

b. Are there any differences among the separate receiving institutions in the achievement of students taking an inter-institutional television course?

It seems reasonable to hypothesize that differences in achievement among students at the separate receiving institutions might exist. Inspection of Table 9 shows that in some instances the magnitude of differences in achievement among students at the respective receiving institutions was greater than the differences between students at the receiving and originating institutions. No immediate explanation is available to explain such differences. Scholastic aptitude has been controlled in the analyses so it seems ruled out as a basic factor. It is reasonable to assume that such differences are related to institutional factors and differences in the composition of the groups that have been largely uncontrolled in the experimentation.

One of these variables, student motivation, has already been discussed extensively in this report. Another variable is that of heterogeneity of students on other bases than that of scholastic aptitude. This would include natural selective factors which might explain some of the differences between groups in Chemistry. Specifically, there is reason to believe that students most interested in technical fields of science in the State of Oregon might tend to select one institution, whereas students most interested in the humanities and liberal arts might tend to select another in consistence with traditional allocation of subjects among the institutions. Controlling scholastic aptitude would not necessarily control these factors. Certainly another variable is that of the differential ability of regular faculty and graduate teaching assistants used in the conventional supplementary sections.

Other important variables might be large school compared to small school atmosphere; public compared to private institutions; size of classes; quality of library and other facilities; differences in attitudes among discussion-instructors as they might affect student attitudes toward course content; and differential extra-class assistance, a largely uncontrolled factor on the separate campuses.

The above factors are suggested as being potential causes for some of the differences among the various institutions. They are limiting factors, however, that should be considered before gross generalizations concerning any of the research conditions are made. An attempt to identify and control some of the variables will be the subject of further study during the next phase of the experiment.

Summary of the Studies of the Effectiveness of Inter-Institutional Television Instruction

a. Are there any differences in achievement between students at the *originating institution* and students at the *separate receiving institutions* associated with the following conditions?

Condition 1. Television lectures received simultaneously by students on all campuses. *Discussion sections on originating campus conducted by television professor;* discussion sections on receiving campuses conducted by home-campus staff.

The data with respect to this condition are generally inconclusive and do not indicate whether there is a differential advantage between students at the originating institution and students at the receiving institutions. The tests of this condition were provided in U.S. History, Appreciation of Literature, and Educational Psychology: Learning. Differences in achievement which did occur were in favor of the students at the originating institution. They were not sufficiently consistent to justify a generalization that this type of condition categorically favors the students at the originating institution nor militates against the students at the receiving institution.

Condition 2. Television lectures received simultaneously by students on all campuses. Discussion sections on originating and receiving campuses conducted by home-campus professor; ***television professor does not conduct discussion sections.***

Tests for this condition were provided by School in American Life, Human Development and Chemistry (for the 1957-58 academic year). The data indicate strongly that there is no statistically significant difference in achievement between students at the originating institution and the receiving institutions. The data lend support to the proposition that origination of a televised course by a professor from one institution does not necessarily work to the advantage (in terms of an achievement test criterion) of the students at the originating institution, nor to the disadvantage of the students at the receiving institutions.

Condition 3. Television lectures received simultaneously by students on all campuses; course entirely by television, ***no supplementary discussion or lab sessions.***

Tests of this condition were provided in General Chemistry during the 1958-59 school year and in U.S. History during the spring term of 1958. The tests in History showed that the students at the originating institution achieved at a slightly higher level. Chemistry provided six tests of this condition. There were no statistically significant differences between originating and receiving institutions on the final exams at the end of each term, including the American Chemical Society examination. On the averages of weekly quizzes, the differences were in favor of the originating institution. It seems reasonable to conclude, however, on the basis of factors discussed, that differences although consistently related to institutional origin are more a function of uncontrolled factors, such as motivation, extra class assistance, and staff attitude, than to the fact of origination *per se.*

b. Are there any differences among the ***separate receiving institutions*** in the achievement of students taking an inter-institutional television course?

The data relevant to this question indicate that there are some statistically significant differences in achievement among the students at the various receiving institutions. There is not yet an experimentally determined basis for explaining these differences, however, many factors seem to contribute to them.

In assessing the results of these studies of the effectiveness of inter-institutional television instruction, it is extremely important to recognize that a statistically significant difference does not necessarily have practical significance. Careful evaluation and interpretation of the differences are necessary. Differences among groups may have statistical significance but the amount of such differences might be such that they are not practically significant in terms of learning.

Comparison of Student Achievement in Televised Sections and in Conventional Control Sections

a. Are there any differences in achievement between students who receive a course by televised instruction and students who take the course in conventional control sections?

Table 12

SUMMARY OF COMPARATIVE SCORES BETWEEN TELEVISION SECTION AND CONVENTIONAL SECTION

HUMAN DEVELOPMENT

Section	*Exam*	*Course Examinations*			
		Mean	*SD*	*N*	*t-ratio*
CV[1]	Midterm (1)	36.10	4.30	30	1.00
TV		34.87	5.59	39	
CV	Midterm (2)	34.40	4.63	30	1.82
TV		32.33	4.74	39	
CV	Final	93.70	11.43	30	1.11
TV		90.47	12.38	38	

[1] CV, Conventional-control sections; TV, Televised sections.

The experimental condition from which the above data were obtained was set up on the Oregon College of Education campus. It was designed to test whether there is a significant difference in achievement between students who have conventional instruction and students who received televised instruction. There was no statistically significant difference (p .05) in achievement between the students in the televised and control sections. The course examinations were used as the criterion instruments.

A control group in General Chemistry was set up on the Oregon State College campus for purposes of comparing conventional and televised instruction. Table 13 reports the data gathered in this experiment. The criteria for comparison are the midterms and final examinations for each term of instruction during the year. Analysis of covariance takes into account differences that exist in initial ability as measured by the ACE Psychological examination.

There was a statistically significant difference (p .05) between the two groups in only one instance. That difference was on the first midterm during the fall term.

The data tend to support further the hypothesis that there are no statistically significant differences in achievement bteween students in televised and conventional sections when course examinations are used as criterion instruments.

Table 13

SUMMARY OF COMPARATIVE SCORES BETWEEN TELEVISED SECTIONS AND CONVENTIONAL SECTIONS

CHEMISTRY

Section	Exam. No.	Course Examination Adj. Mean[2]	N	Analysis of Covariance				
				Source	Adj. SS	df	V	F-Ratio
CV[1] TV	Fall Midterm	77.87 73.46	61 120	Between Within Total	786.32 28,646.87 29,433.19	1 178 179	786.32 160.94	4.89*
CV TV	Fall Final	67.33 64.85	64 121	Between Within Total	359.40 32,090.73 32,450.13	1 182 183	359.40 176.32	2.04
CV TV	Winter Midterm	61.45 62.01	54 93	Between Within Total	65.11 18,173.26 18,238.37	1 144 145	65.11 126.20	.52
CV TV	Winter Final	64.32 63.50	54 94	Between Within Total	23.90 31,346.75 31,370.65	1 145 146	23.90 216.18	.11
CV TV	Spring Midterm	56.66 56.96	47 79	Between Within Total	2.76 11,200.25 11,203.01	1 123 124	2.76 91.06	.03
CV TV	Spring Final	42.25 39.88	47 78	Between Within Total	162.87 14,331.88 14,494.75	1 122 123	162.87 117.47	1.39

[1] CV, control sections receiving conventional instruction; TV, sections receiving televised instruction.
[2] ACE Examinations Scores were used as the adjusting variable.
* Significant beyond the 5% level.

Table 14 indicates that the achievement of students in the conventional section did not differ significantly from students in the televised sections. The results of this comparison must be qualified to some extent, however, because the courses were offered during different terms. The conventional course was given in the winter and the televised course in the spring term. Comparisons are based upon the same final examination.

Table 14

SUMMARY OF COMPARATIVE SCORES BETWEEN TELEVISED SECTIONS AND CONVENTIONAL SECTIONS

EDUCATIONAL PSYCHOLOGY: LEARNING

Section	Course Examinations			Analysis of Variance				
	Exam No.	Mean	N	Source	SS	df	V	F
CV TV[1]	 Final	50.62 52.35	117 77	Between Within Total	139.84 13,315.22 13,455.06	1 192 193	139.84 69.35	2.02

[1] CV, control sections receiving conventional instruction; TV, sections receiving televised instruction.

In addition to the results of the experimental situations just reported, further information regarding comparative achievement in televised and conventionally taught courses was obtained by comparing achievement in televised Chemistry with nationally computed normative data. This was accomplished by administering as a final examination to all students in televised Chemistry sections the American Chemical Society Cooperative Chemistry Examination. The results are reported in Table 15 and 16 which follow.

The favorable position of the televised Chemistry classes on national norms reported in Table 15 is especially noteworthy when the following factor is considered. The Oregon classes had three lecture hours per week and generally less then three lab hours per week (two lab hours at three institutions and three lab hours weekly at the fourth institution). In spite of less actual instruction than the normative group, achievement ranged from the 51st percentile to the 77th percentile. Three of the groups in Table 15 received instruction via television from another campus; one received television instruction from an instructor on its own campus; the other represents a conventional control group. These data present strong evidence that televised instruction compares favorably with conventional instruction.

Table 15

SCORES OF TELEVISION AND CONVENTIONALLY TAUGHT CONTROL SECTIONS (1957-58) AT THE PARTICIPATING INSTITUTIONS ON THE AMERICAN CHEMICAL SOCIETY COOPERATIVE CHEMISTRY EXAMINATION

		Mean of the sections[2]	Percentile on national norms (interpolated[3])
RI[1]	Television	46.3	72
OI	Television	39.5	58
OI	Conventional	42.6	65
RI	Television	36.3	51
RI	Television	49.7	77

[1] RI, Receiving institution; OI, Originating institution.
[2] Unadjusted Means.
[3] The composition of the normative group, according to the Division of Chemical Education, American Chemical Society, "Condensed Norms, ACS Cooperative Examinations," 36.3, March 1959, page 148, is as follows. "A sample of 1788 papers from 13 institutions was selected from the entire groups with fairly common characteristics. The students were tested at the end of a two-semester course receiving 8 hours credit. There were 3 to 4 lecture hours per week,, with a mean of 3.1; and, 3 to 6 laboratory hours per week with a mean of 3.6. Little or no qualitative analysis was taught, the range being from 0 to 4 weeks with a mean of 1.1 weeks."

Table 16

SCORES OF TELEVISION SECTIONS (1958-59) AT THE PARTICIPATING INSTITUTIONS ON THE AMERICAN CHEMICAL SOCIETY COOPERATIVE CHEMISTRY EXAMINATION

		Mean of the sections	*(interpolated) Percentile on national norms*
RI[1]	Television	35.6	49
OI	Television	38.4	56

[1] RI, Receiving institution; OI, Originating institution.

The composition of the groups on which the national norms were based is discussed under Table 15. In reviewing Table 16, the relatively favorable position of the television groups again becomes noteworthy when considering the fact that the instructional time included but four 50-minute periods per week for lecture, lab demonstration and examination. The groups in the normative sample received an average of 3.1 hours of lecture instruction and an average of 3.6 hours of laboratory instruction per week. This seems to indicate that the degree of achievement from televised instruction is equivalent to that of conventionally taught courses.

The following study is included under this section, although it actually is not a comparative study of conventional and televised methods of instruction. It was designed to determine whether some changes in student attitude toward teaching and teaching practices could result from televised instruction. The criterion instrument used was the Minnesota Teacher Attitude Inventory. The televised condition under which this test was made was a combination of televised and conventional supplementary instruction in the Human Development course.

Table 17

CHANGE IN SCORES ON MINNESOTA TEACHER ATTITUDE INVENTORY OF STUDENTS WHO TOOK HUMAN DEVELOPMENT BY INTER-INSTITUTIONAL TELEVISION

MTAI	*Mean*	*SD*	*N*	*t-ratio*
Pre-test	36.19[1]	31.71[2]	37	4.37*
Post-test	49.54	33.08	37	

[1] Higher scores indicate desirable attitudes regarding teaching practices.
[2] Range of scores on this test is from —150 to +150.
* Significant beyond 1% level.

The significantly higher post-test scores indicate that desirable changes in students' attitudes toward teaching and teaching practices were associated with televised instruction.

Summary of the Studies of the Effectiveness of Television Instruction Compared to Conventional Instruction

The basic question asked in these studies is whether there is a significant difference in achievement between students taught by televised instruction and students in conventionally taught control sections. The data relevant to this question strongly support the findings of other studies that have been made at Pennsylvania State University and other institutions; i.e., that there is no statistically significant difference in the achievement of students who receive instruction via television compared to students who receive instruction in conventional-control sections. In the Oregon study there was only one significant difference out of the nine tests of this proposition; the difference was in favor of conventional instruction. These data, together with research conducted elsewhere, suggest that the question of differences between televised and conventional instruction has probably been investigated sufficiently. It should be noted, however, that the lack of differences found in all of these studies may to some extent be a function of the limitations of criterion instruments used. Unless new criterion instruments are developed, it seems that further replication of such studies, without the addition of unique elements, will add nothing to present knowledge regarding televised instruction. Any serious attempt to develop new instruments that will measure the objectives of a course in a more refined fashion will be of inestimable value in differentiating between televised and conventional instruction.

Further information was obtained from comparing the achievement of students in the televised Chemistry classes with the normative data of the American Chemistry Society Cooperative Examination. Comparisons indicate that achievement of the students in the televised Chemistry courses was generally higher than the 50th percentile on the national norms in spite of less instructional time. This would further indicate that the degree of achievement from televised instruction is comparable to achievement from conventional instruction.

An additional study, which measured student attitude toward teaching and teaching practice, showed that desirable changes in these attitudes were associated with televised instruction.

Studies of Student Attitudes Toward Inter-Institutional Television Instruction

Source of Data

Introduction

An important emphasis in this study has been to determine the level of acceptance that students and faculty hold for inter-institutional television instruction. There is strong evidence from other studies which indicates that students do not have a single (unvarying) attitude toward television instruction. The Miami University Study reports:

> It is impossible to generalize about students' attitudes towards TV instruction. It is possible to give a course wherein students prefer TV instruction to conventional instruction . . . or to consider the two to be of comparable effectiveness . . . However, it is also possible for

students in TV courses to feel that television is inferior to conventional instruction.[1]

The Pennsylvania State University Study reports:

> It is abundantly clear that attitudes expressed by students toward televised instruction are not homogeneous single-mode responses. These responses vary widely from course to course with television being a constant factor.[2]

Most television research projects that have attempted to measure student attitudes have been concerned with student attitudes toward televised instruction itself. Data gathering techniques have been designed with this purpose in mind. Researchers have also been concerned with confounding variables such as student attitude toward course content and student attitude toward the television instructor. Such variables make it difficult to determine whether attitudes expressed to students are toward televised teaching as such, or whether they are a function of other factors.

In the Oregon study an important variable was added that does not exist in the other research projects. That variable was the inter-institutional aspect of televised instruction. This was a further complicating factor which had to be taken into consideration in final generalizations concerning student attitudes. A basic area of research in the Oregon Project was to identify student attitudes toward television instruction as they were affected by inter-institutional factors, as well as by factors which are more closely related to television as an instructional medium. The primary sources of data were questionnaires, attitude scales, interviews and controlled observations.

Questionnaires and Attitude Scales

A questionnaire with a basic core of fourteen scaled-response items was administered to students at different times during the first year's research. The responses were summated according to the Likert method of scale construction. This method was selected because, from such a scale it is possible to obtain an overall estimate of student attitude, and perhaps equally important, to permit an analysis of each of the items. The core of fourteen items had a split-half reliability of .85 based upon 150 cases. Additional items were added to the questionnaire according to the information desired during each experimental condition, however, they were not used in the summated ratings.

Equally important with the quantitative analysis of scaled data on the questionnaire was the qualitative analysis of comments and remarks by students. There were free-response questions attached to many of the scaled items and also other open-ended questions designed to elicit comments from students. Literally thousands of separate remarks and comments were categorized and classified. Such qualitative data provided one basis for validating quantitative analyses and also served as a basis for many of the conclusions in this report.

During the course of this research another Likert type attitude scale was developed. This scale became one of the primary techniques by which student attitudes were measured. The statements were constructed on the basis of student comments that were made in the free response parts of previously administered questionnaires. Several forms were administered in an attempt to secure good items before a final form was used. The final scale had a split-half reliability of .96 on a sample of 150 cases.

Interviews

A Comparative Study of the Differences of Attitudes of Students Viewing History and Chemistry Television Courses[1], provided much of the interview information concerning student attitudes which are mentioned in this report.

The sample for the interviews was eighty subjects selected from the inter-institutional televised Chemistry and History courses. The eighty students were selected from the University of Oregon, Oregon State College and Oregon College of Education. Within classes and institutions, they were selected at random.

The interview schedule was constructed as a part of the overall inter-institutional television project on the assumption that interview information could greatly supplement the data obtained from questionnaires and could also be considered as a validating criterion. Each interview was approximately one hour in length.

Validation of Attitude Scales

In a sample of 65 cases the free-response student comments showed a correlation of .89 (r-tetrachoric) with the scaled-response items on the questionnaire. Another criterion used to validate the scaled-response was the series of interviews conducted by Scheller. The interviews showed a correlation of .949 (r-tetrachoric) with the scaled-response items on a sample of 58 cases. Data from the attitude scales and the interviews were obtained by independent investigators and the quantification of the data was also independent. Correlations of the order of .90 were found in a series of r-tetrachorics computed between the student scores obtained on the attitude scales and their free-response written comments. These high positive correlations indicate that a substantial amount of confidence can be placed in the data obtained.

A further validating criterion, used on the informal basis, was to compare the instructor's perception of student attitude with the actual responses of students. In most cases, the discussion-instructor's estimate of student attitude corresponded very closely with the attitude of the students as determined from qualitative and quantitative data. A basic

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1. *Experimental Study in Instructional Procedures*, Report No. *1*, Miami University, Oxford, Ohio, Oct. 1, 1956, P. 32.

2. *An Investigation of Closed Circuit Television for Teaching University Courses*, Report No. 2, Pennsylvania State University, University Park, Pennsylvania, Spring 1958, P. 82.

[1] Scheller, Fred Jr., *A Comparative Study of the Differences in Student Attitudes Toward History and Chemistry Television Courses*, University of Oregon, June 1959. Unpublished Ph.D. dissertation.

question that follows from such data is the extent to which instructor and student attitudes toward televised instruction are related and affect each other.

Presentation of Data

Two methods were considered for presenting the data relevant to student attitudes toward televised instruction. One was by presenting the mean analyses of attitude scales and describing the sample on this basis. The second method was to present the proportion of the sample whose responses reflected respective attitudes of acceptance, indecision or opposition.

The latter method was selected when it became apparent that in some instances a substantial number of the students in the Oregon experiment expressed highly favorable attitudes toward television and a somewhat smaller number expressed highly negative attitudes. Since the mean is very subject to the influence of extreme scores, to present the data by mean analyses only might tend to give a distorted picture of student attitudes toward televised courses. Analysis on the basis of Chi-square, however, in which the frequency expressing a given attitude is presented, should give a truer idea of student acceptance or opposition.

The overall estimate of student attitude as indicated by the scaled responses on the questionnaire will be presented in tabular form. Proportions indicated will be those students who *accept* inter-institutional television instruction, the proportion of those *undecided* and the proportion of those *opposed.*

The three categories generally have the following operational meanings as determined by comparing quantitative responses with a verbal criterion. *Accept* means that the student would voluntarily take the televised courses or that he would be willing to take it without objection, even though he did not seek it out. It does not mean that the student categorically prefers televised instruction to conventional instruction. Acceptance does not seem to be an "either-or" set of absolutes. The *undecided* category, operationally defined, includes students who simply aren't sure whether they would be satisfied to receive a course by television. Some of them indicated a willingness to take a televised course although they would have preferred a conventional course. *Oppose* includes students who stated that they were taking the course only because no other was offered and they would not take the next course in the sequence if at all possible. Appropriate comparisons will be made on the basis of these proportions.

The proportions generally do not include the entire student enrollment in the televised course. Usually a sample of student responses are presented. In some cases the sample represents approximately one-half of the students; in courses in which the enrollment was large, the sample was usually one-third or one-fourth of the students.

In addition to the above, information obtained from analysis of significant items in the scale will be presented and discussed. Finally, the information obtained from the tremendous amount of free-response, qualitative data submitted by the students will be summarized and some conclusions will be drawn.

Pre-experimental Student Acceptance of Inter-Institutional Television Instruction

Introduction

It was necessary to determine pre-experimental student attitudes toward inter-institutional television instruction in order to analyze their post-experimental attitudes accurately. Obviously, the initial attitudes of students could have an important effect upon their subsequent evaluations of the experimental situation. Without some estimate of initial set, their later responses could not be characterized as being a result of the experimental condition.

The students who enrolled in the televised courses were asked to respond to attitude scales designed to determine their feelings toward inter-institutional television instruction. The various scales were completed by students before they attended a televised class and questions asked were particularly in terms of the degree of acceptance evidenced for television and its potential for instructional purposes. Essentially students were asked to project themselves into such a televised instructional situation and to predict how they would react to it. This was an attempt to assess the climate for experimentation and new experience that existed among the students. The pre-experimental attitudes can thus be used as a basis for assessing subsequent specific changes.

Assessement of "initial set" was designed to provide data with respect to the following specific questions:

1. What was the general level of pre-experimental student acceptance for inter-institutional televised instruction?

2. Were differences in acceptance associated with student attitudes toward the institution from which the televised course originated?

3. How do student preferences for *inter*-institutional television instruction compare with their preferences for *intra*-institutional television instruction?

4. What were the basic determinants for pre-experimental student attitudes toward inter-institutional televised instruction?

Presentation of Pre-experimental Student Acceptance Data

As indicated in Tables 18, 19 and 20, the pre-experimental student attitudes toward inter-institutional television instruction varied according to institution and course of enrollment.

In Education, slightly over 50% of the respondents at the participating campuses indicated pre-experimental acceptance of inter-institutional televised instruction, while only

10% to 14% opposed such instruction. Difference in acceptance among institutions were not significant to the 5% level.

Table 18

PRE-EXPERIMENTAL ATTITUDES OF EDUCATION STUDENTS TOWARD INTER-INSTITUTIONAL TELEVISION INSTRUCTION

	Accept	*Undecided*	*Oppose*	*N*
OCE[1]	52% (15)	38% (11)	10% (3)	29
OSC	53% (70)	36% (47)	11% (14)	131
UO	51% (92)	35% (64)	14% (25)	181
			Chi square†=.206	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, Univeristy of Oregon.

† Undecided and oppose were combined in computation of Chi square.

Table 19

PRE-EXPERIMENTAL ATTITUDES OF CHEMISTRY STUDENTS TOWARD INTER-INSTITUTIONAL TELEVISION INSTRUCTION

	Accept	*Undecided*	*Oppose*	*N*
OCE[1]	53% (20)	37% (14)	10% (4)	38
OSC	35% (43)	35% (44)	30% (37)	124
UO	27% (16)	58% (34)	15% (9)	59
WU	51% (23)	33% (15)	16% (7)	45
			Chi square†=10.227*	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University; WU, Willamette University.

† Undecided and oppose were combined in computation of Chi square.

* Significant beyond the 5% level.

Table 20

PRE-EXPERIMENTAL ATTITUDES OF HISTORY STUDENTS TOWARD INTER-INSTITUTIONAL TELEVISION INSTRUCTION

	Accept	*Undecided*	*Oppose*	*N*
OCE[1]	52% (12)	39% (9)	9% (2)	23
UO	53% (59)	34% (38)	13% (15)	112
			Chi square†=.002	

[1] OCE, Oregon College of Education; UO, University of Oregon.

† Undecided and oppose were combined in computation of Chi square.

Acceptance among Chemistry students showed the following patterns. Slightly over 50% of the students at the two smaller institutions were accepting of the idea of inter-institutional television teaching while only 10% to 16% registered actual opposition. A larger proportion (30%) were opposed to inter-institutional television teaching at Oregon State College than at the other institutions. The overall Chi square test of difference among institutions was significant beyond the 5% level.

In History, slightly over 50% of the respondents indicated acceptance of the idea of inter-institutional televised instruction. Only 9% to 13% registered opposition. Differences among institutions were not significant to the 5% level.

The above data seem to present a picture in which the majority of students (except Chemistry at UO and OSC) was accepting of the idea of inter-institutional televised instruction. A relatively small percentage was in actual opposition while a substantial proportion held undecided, reserve-judgment attitudes.

As previously indicated, acceptance is defined as being a willingness to take a course by inter-institutional television. Acceptance, as used in this study, does not have the connotation of an either-or choice between conventional and televised instruction. Essentially, the concept of acceptance represents an attempt to define a group of students who might be willing to receive some part of their course work by inter-institutional television.

Reference to student comments on questionnaires might serve to clarify further the data presented in the preceding tables. The proportion of students indicating opposition to inter-institutional televised instruction did so primarily because of their reservations about the effectiveness of television instruction, not because of the inter-institutional aspect of the instruction. One exception to this seemed to be reflected in the responses of Chemistry students at Oregon State College where a larger proportion of students indicated concern about inter-institutional televised instruction.

Table 21

PRE-EXPERIMENTAL PREFERENCES OF EDUCATION STUDENTS FOR METHOD TEACHING

	Inter-Institutional TV Course	*Intra-Institutional TV Course*	*Conventional Course*	*No Answer*	*N*
OCE[1]	48% (14)	0% (0)	48% (14)	4% (1)	29
OSC	45% (59)	4% (5)	44% (58)	7% (9)	131
UO	39% (75)	3% (6)	51% (98)	7% (14)	193
				Chi square†=1.544	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon.

† Inter-institutional and intra-institutional were combined in computation of Chi square. No answer was excluded.

Table 22

PRE-EXPERIMENTAL PREFERENCE OF CHEMISTRY STUDENTS FOR METHOD OF TEACHING

	Inter-Institutional TV Course	*Intra-Institutional TV Course*	*Conventional Course*	*No Answer*	*N*
OCE[1]	49% (19)	8% (3)	33% (13)	10% (4)	39
OSC	23% (28)	11% (14)	53% (66)	13% (16)	124
UO	33% (22)	3% (2)	58% (38)	6% (4)	66
WU	40% (19)	2% (1)	58% (27)	0% (0)	47
				Chi square†=6.850	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

† Inter-institutional and intra-institutional were combined in computation of Chi square. No answer was excluded.

Table 23

PRE-EXPERIMENTAL PREFERENCE OF HISTORY STUDENTS FOR METHOD OF TEACHING

	Inter-Institutional TV Course	*Intra-Institutional TV Course*	*Conventional Course*	*No Answer*	*N*
OCE[1]	35% (8)	13% (3)	48% (11)	4% (1)	23
UO	41% (48)	12% (14)	39% (46)	9% (10)	118
				Chi square†=.405	

[1] OCE, Oregon College of Education; UO, University of Oregon.

[2] Part of the US History course was taught by television at the University of Oregon in the spring prior to the collection of this data.

† Inter-institutional and intra-institutional were combined in computation of Chi square. No answer was excluded.

Table 24

PRE-EXPERIMENTAL ATTITUDES OF EDUCATION STUDENTS TOWARD INTER-INSTITUTIONAL TELEVISION AND CONVENTIONAL INSTRUCTION

		OCE[1] *N=29*	*OSC* *131*	*UO* *193*
Amount students would learn in TV course	More	14% (4)	21% (28)	19% (37)
	Same	69% (20)	55% (72)	62% (119)
	Less	17% (5)	24% (31)	19% (37)
			Chi square=2.705	
Quality of TV course content	Better	34% (10)	47% (62)	44% (85)
	Same	52% (15)	41% (54)	43% (83)
	Worse	14% (4)	12% (15)	13% (25)
			Chi square†=1.621	
Quality of professors in TV course	Better	38% (11)	55% (72)	58% (112)
	Same	52% (15)	38% (50)	37% (71)
	Worse	10% (3)	7% (9)	5% (10)
			Chi square†=4.127	
Ability of TV course to hold attention	Better	45% (23)	35% (46)	28% (54)
	Same	45% (13)	37% (48)	41% (79)
	Worse	10% (3)	28% (37)	31% (60)
			Chi square=7.276	
Concern over less personal contact with professor in TV course	Yes	45% (13)	53% (69)	60% (116)
	Don't Know	31% (9)	22% (29)	15% (29)
	No	24% (7)	25% (33)	25% (48)
			Chi square=5.994	
Concern over lack of opportunity to ask questions in TV course	Yes	72% (21)	66% (86)	63% (122)
	Don't Know	4% (1)	13% (17)	17% (33)
	No	24% (7)	21% (28)	20% (38)
			Chi square†=.994	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon.

† Same and worse (don't know and no) were combined in computation of Chi square.

Table 25

PRE-EXPERIMENTAL ATTITUDES OF CHEMISTRY STUDENTS TOWARD INTER-INSTITUTIONAL TELEVISION AND CONVENTIONAL INSTRUCTION

		OCE[1] *N=39*	*OSC* *124*	*UO* *66*
Amount students would earn in TV course	More	21% (8)	13% (16)	20% (13)
	Same	59% (23)	61% (76)	51% (34)
	Less	20% (8)	26% (32)	29% (19)
			Chi square=3.151	
Quality of TV course content	Better	41% (16)	32% (40)	35% (23)
	Same	44% (17)	52% (64)	50% (33)
	Worse	15% (6)	16% (20)	15% (10)
			Chi square=1.079	
Quality of professors in TV course	Better	41% (16)	41% (51)	51% (34)
	Same	51% (20)	52% (64)	41% (27)
	Worse	8% (3)	7% (9)	8% (5)
			Chi square†=2.064	
Ability of TV course to hold attention	Better	46% (18)	29% (36)	26% (17)
	Same	44% (17)	34% (42)	45% (30)
	Worse	10% (4)	37% (46)	29% (19)
			Chi square=19.351*	
Concern over less personal contact with professor in TV course	Yes	44% (17)	55% (68)	63% (42)
	Don't know	36% (14)	26% (32)	18% (12)
	No	20% (8)	19% (24)	19% (12)
			Chi square=4.930	
Concern over lack of opportunity to ask questions in TV course	Yes	67% (26)	67% (83)	77% (51)
	Don't know	18% (7)	21% (26)	11% (7)
	No	15% (6)	12% (15)	12% (8)
			Chi square†=2.419	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon.

† Same and worse (don't know and no) were combined in computation of Chi square.

* Significant beyond the 5% level.

Table 26

PRE-EXPERIMENTAL ATTITUDES OF HISTORY STUDENTS TOWARD INTER-INSTITUTIONAL TELEVISION AND CONVENTIONAL INSTRUCTION

		OCE[1] *N=23*	*UO* *118*
Amount students would learn in TV course	More	22% (5)	25% (30)
	Same	70% (16)	62% (73)
	Less	8% (2)	13% (15)
		Chi square†=.140	
Quality of TV course content	Better	57% (13)	44% (52)
	Same	35% (8)	49% (58)
	Worse	8% (2)	7% (8)
		Chi square†=1.205	
Quality of professors in TV course	Better	57% (13)	59% (70)
	Same	39% (9)	39% (46)
	Worse	4% (1)	2% (2)
		Chi square†=.063	
Ability of TV course to hold attention	Better	43% (10)	37% (44)
	Same	35% (8)	36% (42)
	Worse	22% (5)	27% (32)
		Chi square=.410	
Concern over less personal contact with professor in TV course	Yes	57% (13)	59% (70)
	Don't know	17% (4)	21% (25)
	No	26% (6)	20% (23)
		Chi square†=.063	
Concern over lack of opportunity to ask questions in TV course	Yes	61% (14)	63% (74)
	Don't know	22% (5)	15% (18)
	No	17% (4)	22% (26)
		Chi square†=.028	

[1] OSC, Oregon College of Education; UO, University of Oregon.

† Same and worse (don't know and no) were combined in computation of Chi square.

In discussion of the data in Tables 24, 25 and 26, the categories "same" and "better" have been combined. This was done on the basic assumption that students who felt televised instruction to be the "same" as conventional instruction with respect to a specific factor, would be accepting of televised instruction with respect to that factor. Such an interpretation is consistent with the rationale underlying the development of student attitudinal data in which the emphasis is upon identification of student acceptance of televised instruction not preference of televised over conventional instruction.

The data from Tables 24, 25 and 26, indicate the following. A large majority of the students felt that they would learn as much or more from, televised instruction than from conventional instruction. Between 8% and 29% of the respondents in the respective groups felt that they would learn less from televised instruction than from conventional instruction.

A large majority of the respondents at the respective institutions felt that the quality of televised courses would be the same as, or better than conventional courses. From 7% to 16% felt that televised instruction would be inferior in quality to conventional instruction.

An extremely large majority of the respondents felt that the caliber of professors in television courses would be the same as, or better than in conventional courses. Only 2% to 10% of the respondents felt that the caliber of telvision professors would be inferior to that of conventional professors.

A majority of the students felt that attention in televised classes would be the same or better than attention in conventional classes. From 10% to 37% of the respondents felt that attention would be worse in a televised course than in a conventional class.

A majority of the respondents were concerned about the possibility of less personal contact with the television professors than with conventional professors. A substantial proportion were undecided. From 19% to 26% of the students stated that they were not concerned about this factor.

Table 27

PERCENTAGE OF EDUCATION STUDENTS INDICATING PREFERENCE FOR ORIGINATION FROM A SPECIFIC INSTITUTION

		Institution of Respondent			Chi
		OCE[1]	OSC	UO	square†
Institution	OCE	72	64	57	3.460
Preferred for	OSC	75	76	69	2.353
Origination	UO	79	69	81	6.500*
	N=	OCE 29	OSC 131	UO 193	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

† Computation of Chi square based upon two categories, proportion of preference which is shown in Table 27 and proportion of undecided or oppose not shown in Table 27.

* Significant beyond 5% level.

Table 28

PERCENTAGE OF CHEMISTRY STUDENTS INDICATING PREFERENCE FOR ORIGINATION FROM A SPECIFIC INSTITUTION

		Institution of Respondent				Chi
		OCE[1]	OSC	UO	WU	square†
	OCE	75	38	42	62	20.269*
Institution	OSC	72	61	59	72	3,539
Preferred for	UO	56	34	68	66	27.008*
Origination	WU	38	26	42	66	23.857*
	N=	OCE 39	OSC 124	UO 66	WU 47	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

† Computation of Chi square based upon two categories, proportion of preference which is shown in Table 27 and proportion of undecided or oppose not shown in Table 27.

* Significant beyond 5% level.

Table 29

PERCENTAGE OF HISTORY STUDENTS INDICATING PREFERENCE FOR ORIGINATION FROM A SPECIFIC INSTITUTION

		Institution of Respondent		
		OCE[1]	UO	Chi square†
Institution	OCE	74	45	6.471*
Preferred for Origination	UO	48	79	9.530*
	N=	OCE 23	UO 118	

[1] OCE, Oregon College of Education; UO, University of Oregon.

† Computation of Chi square based upon two categories, proportion of preference which is shown in Table 27 and proportion of undecided or oppose not shown in Table 27.

* Significant beyond 5% level.

A majority of the students were concerned over the lack of opportunity for asking questions in class. From 4% to 22% did not know how they would feel about this factor. From 12% to 24% of the respondents indicated no concern.

In comparing student attitudes among institutions, within courses the only factor which was significant beyond the 5% level was that of attention.

Data from Table 27, 28 and 29 show the degree of student preference for origination from the institutions participating in the project. A salient feature of the data is that, with the exception of History students at Oregon College of Education, a large majority of respondents at all institutions showed preference for origination of courses from the institutions which were actually to originate them. Most of the differences in proportions of preference for specific institutions were significant beyond the 5% level.

The tables also indicate some degree of preference for origination from home institutions and from the larger institutions. This is somewhat in contradiction to student comments written on questionnaires in which the majority of students state that the basic criterion of origination should be the competence of the professor and that the institution should not matter. Their familiarity with home campus staff apparently accounts for this preference. It can probably also be assumed that students may feel that outstanding professors are more likely to be found at the larger institutions.

History and Chemistry students seemed to be less willing to accept origination of courses elsewhere than were Education students.

Summary of the Studies of Pre-experimental Student Attitudes[1]

1. What was the general level of pre-experimental student acceptance for inter-institutional televised instruction?

There were some differences in the proportion of acceptance associated with course of enrollment, institution of the respondent, and the institution which was suggested for origination. A majority of the students in Education and History accepted the idea of inter-institutional television instruction. In Chemistry there was majority acceptance at the two smaller institutions (OCE, WU) but the majority of Chemistry students were undecided or opposed at the two larger institutions (OSC, UO). A majority of students on each campus in all courses, with one exception, approved origination from the institution that had actually been selected for origination.

Although generally accepting of the idea of televised instruction, less than half of the respondents stated that they would actually prefer inter-institutional television teaching over conventional instruction for the specific course in which they were enrolling.

There was substantially no direct verbal opposition in

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[1] This summary is based in part upon analyses drawn from a great number of student comments which are not presented in the previous section.

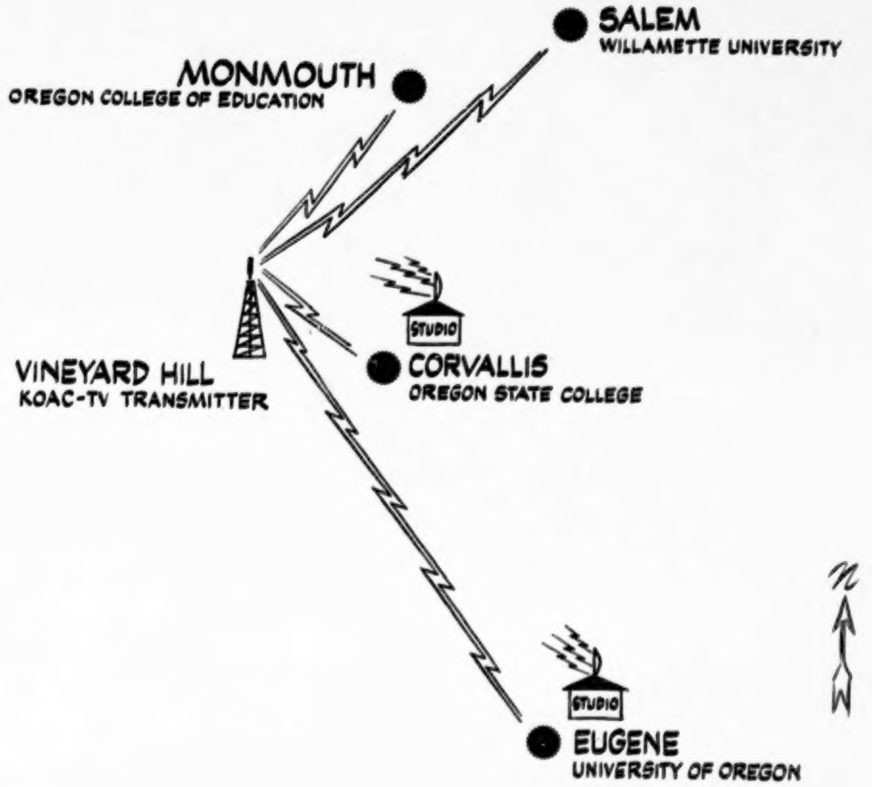
SALEM
WILLAMETTE UNIVERSITY
MONMOUTH
OREGON COLLEGE OF EDUCATION
STUDIO
VINEYARD HILL
KOAC-TV TRANSMITTER
CORVALLIS
OREGON STATE COLLEGE
STUDIO
EUGENE
UNIVERSITY OF OREGON
N

FIGURE 1. Map showing location of the participating institutions in Oregon's television teaching experiment. The University of Oregon campus at Eugene is approximately 45 miles from the transmitter.

KOAC
UNIVERSITY

FIGURE 2. A visual is checked "on camera" in the University of Oregon studios by TV Director Lewis, project director Starlin and production assistant Ramey.

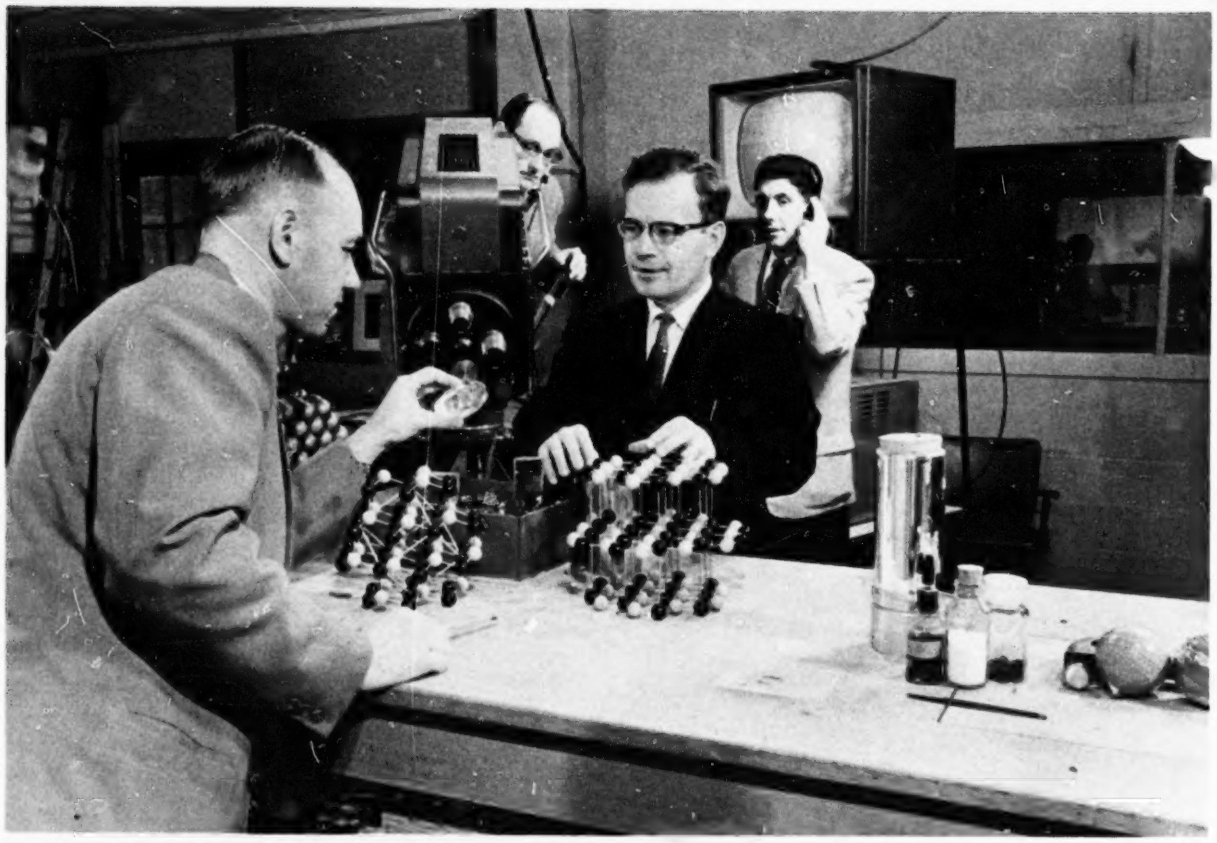

FIGURE 3. Professor Wendell Slabaugh, TV committee chairman Livingston and TV director McGrath check out a chemistry demonstration in the Oregon State College studios.

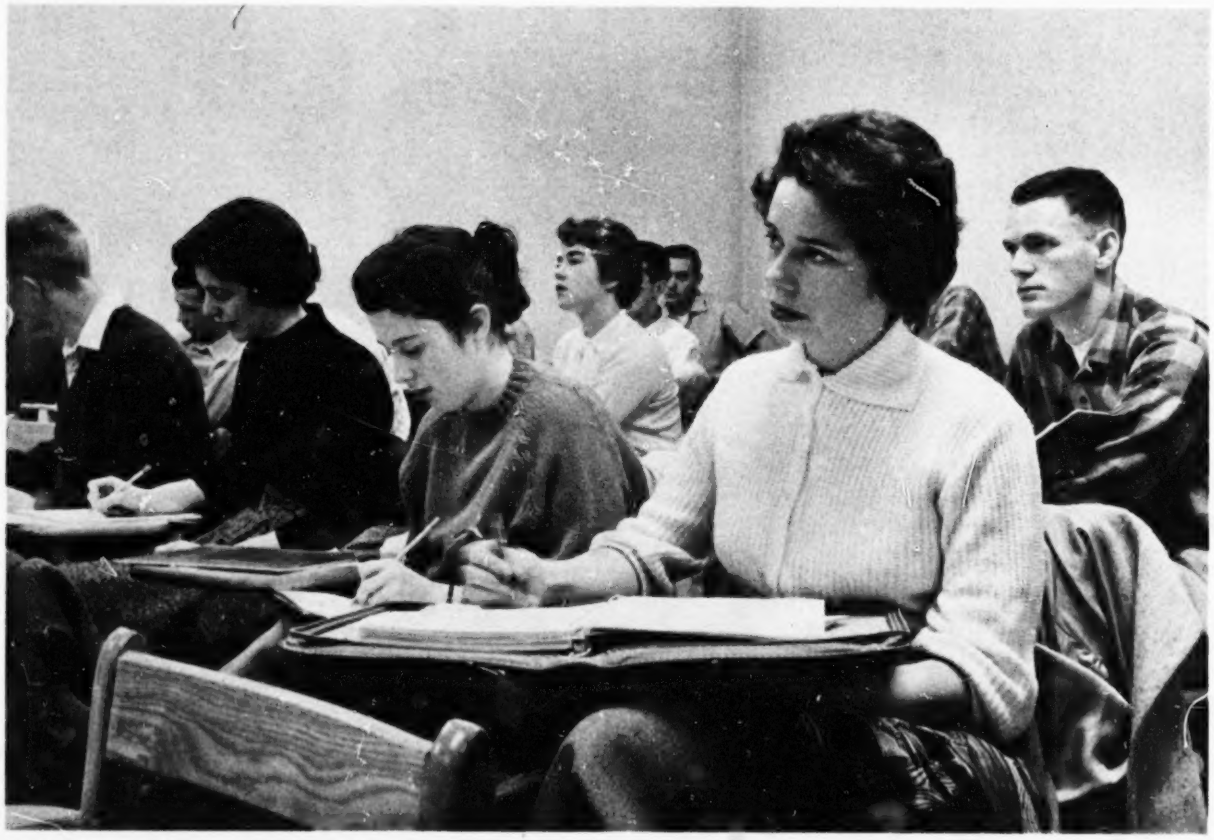

FIGURE 4. A candid shot of students viewing a telecourse of the Oregon Inter-Institutional Television Teaching Project.

student comments registered toward the inter-institutional aspect of television instruction. Most opposition that was registered was clearly concerned with student acceptance of television as an instructional medium. Even students who preferred conventional instruction, in many instances expressed a favorable generalized attitude toward the inter-institutional aspect of televised instruction for some courses and areas.

2. Were differences in acceptance asociated with student attitudes toward the institution from which the televised course originated?

The majority of students in each course and on each campus indicated a preference for origination from their own institution. This can probably be explained in terms of such factors as familiarity with the staff at their own institution, popularity of local professors, knowledge of the curriculum, and institutional loyalty.

Percentage of preference for home-campus origination was usually higher than for origination from another campus. Next highest percentage of preference was generally for those institutions from which the courses were actually scheduled to originate. This most likely was a factor that contributed favorably to student attitudes. An exception occurred in the case of History students at Oregon College of Education where less than half of the respondents indicated approval of receiving a course from the University of Oregon. This bias seemed self-sustaining during the course.

In some cases a slightly larger proportion of students at both large and small institutions indicated preferences for origination from the larger institutions, however, size as such did not seem to be a determining factor.

Students verbally report that origination should be a function of the ability of the professor and not necessarily be related to the institution. However, this conclusion must be considered against the evidence that students apparently indicate a higher proportion of acceptance for home institution origination and for origination from larger institutions, and that there were significant differences in preference for origination from specific institutions.

The differences according to size and subject matter notwithstanding, most of the evidence indicated that the inter-institutional aspect of instruction, or institutional origin did not operate as a basis for the development of negative attitudes by the students in the program as organized.

3. How do student preferences for *inter*-institutional television instruction compare with their preferences for *intra*-institutional television instruction?

Students express verbal preferences for inter-institutional television instruction over intra-institutional television instruction. Percentages in favor of intra-institutional television instruction ranged below 15%. In view of preferences for home-campus origination as indicated above, however, there is some reason to believe that the preference for intra-institutional television instruction might be higher than can be inferred from student reports.

4. What were the basic determinants of pre-experimental student attitudes toward inter-institutional televised instruction?

Generally, the large majority of students anticipated that the quality of the course and ability of the professors would be equal to or better than that in a conventional class. A very small proportion felt that instructional television would be inferior in any of the above characteristics. A majority felt that they would learn as much or more, and that inter-institutional television would hold their attention as well or better than conventional instruction.

A majority of the students in the all-televised courses were concerned about the fact that they would not be able to ask questions in class and that they would have a less personal relationship with their professor.

Analysis of free-response comments of the students indicated the following as the most important bases for their attitudes toward television instruction.

Most of the students who indicated a preference for inter-institutional television over conventional instruction in the pre-experimental questionnaire said that they did so because they were interested and curious, since this was a novel and new approach to teaching. They evidenced a high degree of experimental interest. In addition, they indicated the following factors:

Students expected that the most outstanding professor would be selected from a wide range of professors to teach the television course.

The medium of inter-institutional television would enable a substantially greater number of students throughout the state to obtain the same degree of quality instruction.

Students expected that the television professor would be better prepared and that the television course would probably be more carefully planned and carried out than the typical conventional courses.

Students expected a wider variety of viewpoints through inter-institutional television than they would obtain from instruction limited to a single campus.

The reasons cited above are listed in order of importance as determined by frequency of response.

Reasons cited for disapproval of the inter-institutional television instruction seemed to be grouped under the following:

The professor-student contact would be too impersonal and unsatisfactory.

Students would be unable to ask questions in class.

There would be no opportunity for instructors to adapt to individual differences in the class.

The above comments are categorizations of responses to free-response items. Pre-experimentally, the free response items above were about two to one in favor of the experimental program. The reasons cited did not vary much according to course and institution.

The fact that the instruction was to originate at another campus was rarely mentioned as a basis for dissatisfaction. In pre-experimental estimates, negative feelings were more closely related to television as an instructional medium than to the fact of inter-institutional instruction.

A basic question to be answered in assessing the pre-experimental attitudes of students toward inter-institutional television instruction was whether there seemed to be any factors inherent in inter-institutional relationships which would predispose students to react negatively toward such instruction. Some of these factors presumably could have been prestige differences among institutions; rivalry among institutions including factors of "institutional loyalty", "institutional hostility" and the importance of the reputation of an institution in academic areas.

The data indicate that the above factors, although potentially important, did not seem to militate against the inter-institutional television teaching program as it was organized. It can probably be concluded that the pre-experimental set of the students toward inter-institutional television instruction operated to the advantage of the television experiment.

Post-experimental Student Attitudes Toward Inter-Institutional Television Instruction

Research Objectives

The following is a general statement of the research objectives which guided the collection and presentation of data.

1. To determine the general level of post-experimental student acceptance for inter-institutional television teaching.
   a. To determine whether student acceptance of inter-institutional television instruction was related to enrollment in a specific television course.
   b. To determine whether student acceptance of inter-institutional television instruction was related to residence at a specific institution.

2. To identify and describe factors associated with the organization of inter-institutional television instruction, which seem to operate as determinants of student attitude toward inter-institutional televised teaching.

3. To identify and describe instructional factors related to television as a teaching medium, which seemed to operate as determinants of student attitudes toward inter-institutional television teaching.

4. To obtain information regarding the stability of student attitudes toward inter-institutional television instruction.

5. To identify relationships that exist between student attitudes toward inter-institutional televised teaching and specific student behaviors or personality characteristics.

Presentation of Findings

Analysis of the general level of post-experimental student acceptance for inter-institutional television teaching

Post-experimental acceptance of inter-institutional teievision instruction by students enrolled in televised Education courses

Table 30

PROPORTIONS OF EDUCATION STUDENTS WHO REPORTED POST-EXPERIMENTAL ATTITUDES OF ACCEPT, UNDECIDED OR OPPOSE TO INTER-INSTITUTIONAL TELEVISION INSTRUCTION

		Accept		*Undecided*		*Oppose*		*N*
School in American Life	OCE[1]	69%	(24)	17%	(6)	14%	(5)	35
	UO	54%	(78)	27%	(39)	19%	(27)	144
				Chi square= 2.452				
Human Development	OCE	64%	(16)	32%	(8)	4%	(1)	25
	OSC	46%	(13)	29%	(8)	25%	(7)	28
	UO	34%	(56)	36%	(60)	30%	(50)	166
				Chi square=11.676*				

[1] OCE Oregon College of Education; OSC, Oregon State College; UO, University of Oregon.

* Significant beyond the 5% level.

Table 30 shows that the majority of the students in School in American Life at Oregon College of Education and the University of Oregon(the originating institution) indicated acceptance of an inter-institutional television course. There were no statistically significant differences in acceptance between the two institutions.

Data from the sections at Oregon State College are not presented because questionnaires were, by mistake, administered in the same class period as that in which the students took their finals. It can be assumed, and this was verified by the discussion-instructors, that such an administrative mishap operated to bias negatively the attitudes of the respondents. However, it had been fairly well established on the basis of prior information that Education students at Oregon State College were less accepting of inter-institutional television instruction than were students at the other two institutions.

Table 30 shows also the general level of acceptance of inter-institutional televised instruction of students in Human Development. Majority acceptance was reported at the originating institution (Oregon College of Education), however, at the receiving institutions there was only minority acceptance. The differences among the originating and receiving institutions were statistically significant beyond the 5% level.

Analyses of student comments about School in American Life reported in Table 31, particularly at Oregon State College, showed student concern over the lack of coordination between the discussion sections and the televised presentation. There was considerable concern over the lack of a satisfactory student-teacher relationship and the fact that they could not ask questions in class. Apparently the discussion sections did not compensate for lack of contact with the televised professor. Contrary to the usual pattern in which attitude toward course and attitude toward television professor seem identical, in School in American Life considerable distinction was made between the television professor and the course itself. Most students indicated a substantial degree of satisfaction with the television professor, but dissatisfaction with the manner in which the course had worked out operationally.

Table 31
SCHOOL IN AMERICAN LIFE
Frequency Table of Student Comments[1]

N=	OSC 142	UO 120
Reasons cited for favoring inter-institutional television instruction		
Professor:		
Professor is competent, able	15	24
Lecture and discussion:		
Visual aids are good	8	12
Requires attention and concentration	8	17
Lectures concise; material covered more quickly; well organized and meaningful; good presentation and preparation	29	37
Broader education, different views	8	17
Experimental:		
More people benefit	14	35
Can relieve teacher shortage	4	9
Experimental curiosity	5	15
Depends upon professor: good for this class and professor but perhaps not for another	24	32
Reasons cited as disadvantages of inter-institutional television instruction		
Professor:		
Prefer professor from my own campus	13	0
Lecture:		
Lecture too fast and too formal	22	8
Lectures and discussion period don't correlate; seems like two different courses; should stick to outline	47	22
No personal contact or chance for questions during lecture	59	30

[1] The frequency tables show comments made by students in response to open-ended questions. The responses were categorized and are presented in the classifications used in the table. Only a part of the total amount of data is being presented in this qualitative report. Actually, during the year, five questionnaires with projective type questions were presented to students for completion. The comments are not discrete but are rather tabulations of the number of times a concept was mentioned. They sometimes represent more than one response by each student. Proctically no student failed to fill out some comments in response to the open-ended questions.

Analyses of student comments about Human Development reported in Table 32, and of specific questionnaire items indicated that the primary reasons cited by students who were not continuing with the next course in the sequence were lack of contact with the television professor, inadequate opportunity for asking questions in class, lack of coordination between discussion sections and the television presentation, some lack of acceptance of the television professor and dissatisfaction with the level of instruction.

The third term of the Education sequence offered in the first year of the inter-institutional television project was Educational Psychology: Learning. Analyses of the attitudes of students in Educational Psychology were made from student comments (reported in Table 33) and from specific questionnaire items. The analyses indicated that there was a general lack of acceptance at the receiving institutions. Acceptance of the course was greater at the originating institution.

It should be noted that Educational Psychology: Learning was organized and taught by two instructors, a variation in the instructional pattern of the courses taught by television in the Oregon project. Item analyses of questionnaire responses indicated sufficient favorable student comment about this method of instruction to warrant further experimentation.

There were fewer student comments about this course than the other Education courses which have been offered. A possible explanation to account for this is that the students had become somewhat tired of filling out questionnaire items, since so many of them had filled out forms for other televised Education courses.

Table 32
HUMAN DEVELOPMENT
Frequency Table of Student Comments[1]

N=	OCE 22	OSC 29	UO 166
Reasons cited for favoring inter-instittuional television instruction			
Professor:			
Competent professor	2	2	20
Lecture:			
Guest speakers good, visual aids are stimulating and interesting	7	13	68
Lectures well prepared, materal organized well	13	2	30
Experimental:			
Uniform program for all, broader scope	13	3	21
Depends upon professor and course	2	0	15
Reasons cited as disadvantages for inter-instittuional televised instruction:			
Lecturer and professor:			
No other conventional sections available	0	0	27
Level of instruction seems inappropriate	0	0	30
No correlation between lectures and discussion	1	1	31
No personal contact or chance for questions during lecture	11	8	81
Learn less	0	1	29
Intra-institutional TV:			
Prefer professor from own campus, can meet professor	0	1	19

[1] The number of comments is usually more than the number of respondents since some students made more than one comment.

In summary, Education courses showed the following pattern of student acceptance. A majority of the students at the originating institution and at one receiving institution indicated acceptance of School in American Life. There was only minority acceptance at the other receiving institution. There was majority acceptance of Human Development and

Educational Psychology: Learning, at the originating institutions. A minority of the students only at the receiving institutions indicated acceptance of these courses.

These data indicate some lessening of acceptance, since Education students pre-experimentally had shown a high level of acceptance of the idea of inter-institutional television.

Table 33
EDUCATIONAL PSYCHOLOGY: LEARNING
FREQUENCY TABLE OF STUDENT COMMENTS[1]

N=	OCE 12	OSC 71	UO 65
Reasons cited for favoring inter-institutional televised instruction:			
Professor and Lecture:			
Professor is good, lectures well prepared, more material given	5	2	37
Reasons cited as disadvantages of inter-institutional televised instruction:			
Lectures:			
Hard to follow, don't learn enough	4	1	16
Need personal contact	2	1	18
TV isn't stimulating, doesn't hold attention	3	15	21

[1] The number of comments is usually more than the number of respondents since some students made more than one comment. Fewer number of comments on this table, particularly at OSC, does not necessarily mean lack of acceptance of the course since Educational Psychology was well accepted by students at the originating institution. Limited number of comments reflects lack of time during administration of questionnaire and the fact that this was the last of many questionnaires filled out during the year.

Post-experimental acceptance of inter-institutional television instruction by students enrolled in televised U. S. History course

Table 34
PROPORTIONS OF HISTORY STUDENTS WHO REPORT POST-EXPERIMENTAL ATTITUDES OF ACCEPT, UNDECIDED OR OPPOSE TO INTER-INSTITUTIONAL TELEVISION INSTRUCTION

	FALL TERM			
	Accept	*Undecided*	*Oppose*	*N*
OCE[1]	44% (12)	30% (8)	26% (7)	27
UO	63% (46)	16% (12)	21% (15)	73
			Chi square=3.145	
	WINTER TERM			
	Accept	*Undecided*	*Oppose*	*N*
OCE[1]	42% (15)	25% (9)	33% (12)	36
UO	59% (39)	29% (19)	12% (8)	66
			Chi square=6.801*	

[1] OCE, Oregon College of Education; UO, University of Oregon.
* Significant beyond the 5% level.

Table 34 indicates the levels of student acceptance of History students for inter-institutional television teaching. The data show that more students at the originating institution (UO) were accepting of such instruction than at Oregon College of Education, the receiving institution. The differences between institutions were statistically significant, beyond the 5% level during the winter term. Post-experimental level of acceptance at the receiving institution closely paralleled the level of pre-experimental student acceptance. In this particular instance, it seems reasonable to assume that pre-experimental biases continued during the course of instruction.

Analysis of questionnaire items show that the primary reasons cited by those History students who were not continuing with televised instruction were: the lack of personal contact with the televised professor, lack of opportunity for questions and a lack of correlation between television lectures and discussion sections.

History students from the originating institution (UO) showed few significant changes from pre-experimental estimates in overall level of acceptance. They reported post-experimentally that the majority of their classmates seemed to favor inter-institutional televised instruction, whereas in pre-experimental estimates, respondents were undecided about majority opinion. There was also significantly less concern about not being able to ask questions during televised lectures.

Since the number of students at Willamette University taking the U.S. History course was so small, comparisons of student acceptance did not seem warranted. Student comments are included in Table 35 to give some indication of their feelings.

Table 35
U. S. HISTORY
FREQUENCY TABLE OF STUDENT COMMENTS[1]

N=	OCE 44	UO 83	WU 5
Reasons cited for favoring inter-institutional televised instruction			
Professor:			
Good—outstanding	4	15	1
Lecture:			
Lecture is better prepared, visual aids are good, holds attention, broader viewpoints	21	28	1
Experimental:			
TV good as an experiment, Like TV—new approach	6	14	
Depends on course, for large classes only	5	15	
Reasons cited as disadvantages of inter-institution televised instruction			
Professor:			
Prefer another professor	9	2	1
Lecture:			
Correlation needed between TV lectures and discussion section	19	1	
Cannot ask questions during class ,no personal contact with professor	21	18	1
Doesn't hold attention—learn less	6	13	

[1] The number of comments is usually more than the number of respondents since some students made more than one comment.

Table 36 indicates that a majority of the students in the Chemistry television course during fall and winter terms accepted this type of instruction, i.e., they would voluntarily take such a televised course or be willing to enroll in it without objection whether or not another conventional course were available. The data show, that in the case of Oregon College of Education and University of Oregon particularly, a large percentage of students evidenced a favorable attitude. These data have been validated by interviews, instructor reports, and by an ample amount of student comments. Some indication of student comments is outlined in Table 37. The overall Chi square test of differences among institutions was significant beyond the criterion level during fall term.

Post-experimental acceptance of inter-institutional television instruction by students enrolled in the televised General Chemistry course

Table 36

PROPORTIONS OF CHEMISTRY STUDENTS (1957-58)[1] WHO REPORT POST-EXPERIMENTAL ATTITUDES OF ACCEPT, UNDECIDED OR OPPOSE TO INTER-INSTITUTIONAL TELEVISION INSTRUCTION

FALL TERM

	Accept	*Undecided*	*Oppose*	*N*
OCE[2]	80% (37)	16% (7)	4% (2)	46
OSC	53% (66)	33% (41)	14% (17)	124
UO	75% (41)	20% (11)	5% (3)	55
WU	57% (23)	25% (10)	18% (7)	40

Chi square†=14.745*

WINTER TERM

	Accept	*Undecided*	*Oppose*	*N*
OCE[2]	75% (30)	18% (7)	7% (3)	40
OSC	57% (47)	28% (23)	15% (13)	83
UO	73% (38)	24% (12)	3% (2)	52
WU	54% (22)	24% (10)	22% (9)	41

Chi square=11.547

[1] General Chemistry during 1957-58 consisted of televised instruction supplemented with quiz sections and labs.

[2] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

† Undecided and oppose were combined in computation of Chi square.

* Significant beyond the 5% level.

Table 38 shows that by the end of the first term, Chemistry students showed a striking increase over pre-experimental estimates in their willingness to accept Chemistry instruction on inter-institutional television. This seems especially significant, since initially, Chemistry students had evidenced a great deal of apprehension about, and only minority acceptance of, inter-institutional televised instruction. Analysis of specific questionnaire items shows that, among students enrolled in the televised Chemistry course, there was significantly less concern post-experimentally than there had been pre-experimentally about such factors as a personal relationship with the professor and the lack of opportunity to ask questions during class.

Interestingly enough, the acceptance of inter-institutional television instruction by Chemistry students was higher at the receiving institutions than at the originating institution. In addition, Table 38 represents the proportion of all Chemistry students who indicated preferences for inter-institutional televised instruction over a conventional course on their home campus.

Table 37

GENERAL CHEMISTRY (1957-58)

FREQUENCY TABLE OF STUDENT COMMENTS[1]

	OCE	*OSC*	*UO*	*WU*
N=	*39*	*124*	*66*	*47*
Reasons cited for favoring inter-institutional televised instruction				
Professor:				
Best, wider choice of professors	16	20	30	23
Lecture:				
Better planned and presented	16	18	21	15
Easier to hear and see	12	5	8	4
Holds attention	7	4	8	5
Learning:				
I like TV instruction (statement volunteered, not solicited)	31	43	51	28
Experimental:				
As good as conventional class	10	4	9	7
More students benefit	17	13	22	9
Reasons cited as disadvantages of inter-institutional televised instruction				
Professor:				
Don't want a professor from another school	1	0	2	0
Lecture:				
Can't ask questions in class[2]	22	17	18	37
Prefer demonstrations in class	2	0	0	1
TV class covers less material	4	1	1	2
Cannot obtain individual help if needed	4	1	1	2
Experimental:				
Dislike TV	2	0	2	1
Poor reception	6	1	1	0

[1] Questionnaire administered at mid-term.

[2] At the end of the term frequency of comments indicating concern about personal contact and lack of opportunity to ask questions was very small. Only 30% cited concern about this factor compared to 70% in pre-experimental estimates. The number of comments is usually more than the number of respondents since some students made more than one comment.

Table 38

PROPORTIONS OF CHEMISTRY STUDENTS INDICATING PREFERENCE FOR INTER-INSTITUTIONAL TELEVISION INSTRUCTION

	Pre-experimental	*N*	*End of Fall Term*	*N*
OCE[1]	49% (19)	39	71%[2] (28)	40
OSC	23% (29)	124	54% (67)	124[3]
UO	33% (22)	66	71% (39)	55[4]
WU	40% (19)	47	46% (18)	40

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

[2] At Oregon College of Education an additional 8% of the respondents reported a preference for intra-institutional television. This makes a total of 79% of the respondents who favor televised instruction for this course. At Oregon State College, an additional 18% reported a preference for intra-institutional television making a total of 72% of the students who prefer television instruction for this course.

[3] Due to an administrative mishap only 22 questionnaires were administered to Chemistry students on the Oregon State campus at the end of the quarter. Because the number was so small, the mid-term questionnaire data is reported above for Oregon State College.

[4] Differences in N due primarily to drops during registration period and failure of a few students to return forms. Scheller interviews, previously discussed, indicate even higher proportion of preference.

Table 39 presents levels of student acceptance for Chemistry on inter-institutional television during the second year of experimentation. From 70% to 84% of the students indi-

Table 39

PROPORTIONS OF CHEMISTRY STUDENTS (1958-59)[1] WHO REPORTED POST-EXPERIMENTAL ATTITUDES OF ACCEPT, UNDECIDED OR OPPOSE TO INTER-INSTITUTIONAL TELEVISION INSTRUCTION

	Fall Term			
	Accept	*Undecided*	*Oppose*	*N*
OSC[2]	70% (30)	16% (7)	14% (6)	43
UO	75% (27)	11% (4)	14% (5)	36
			Chi square=.449	
	Winter Term			
	Accept	*Undecided*	*Oppose*	*N*
OSC	83% (38)	11% (5)	6% (3)	46
UO	84% (27)	13% (4)	3% (1)	32
			Chi square†=.041	

[1] General Chemistry during 1958-59 was taught entirely on television without lab or discussion sections. Because of small enrollment at Oregon College of Education and Willamette University, data is not reported for them.

[2] OSC, Oregon State College; UO, University of Oregon.

† Undecided and oppose were combined in computation of Chi square.

cated acceptance of this type of instruction. This is consistent with the results of the first year in which a majority of students were accepting of Chemistry by inter-institutional television. The salient feature of these data when compared with the first year is the fact that they represent student attitudes toward a course which was entirely on television without any supplementary conventional discussion or lab periods. Differences among institutions were not statistically significant to the criterion level.

Acceptance of televised Chemistry at the receiving institutions for both years was actually as great as, or greater than, acceptance at the originating institution. During 1958-59 the students who took this course also had the option of taking it in a conventional class on their own campus.

The basic factors that seemed to be determinants of favorable student attitudes toward Chemistry were the adequacy of the professor, satisfaction with the organization of the course and the fact that television viewing permitted close-up observation of the lecturer and of the demonstration.

It is interesting to note that there was practically no student dropout at the originating institution, although this was partially accounted for by the fact that the students did not want to change from a course which had televised laboratory sections to a course which had conventional laboratory sessions. The small dropout at the receiving institution primarily included students whose aptitude test scores were significantly lower than the average of the class.

Although students indicated a high level of acceptance for the course, their free-response comments on questionnaires evidence some concern about the arrangements that had been made for taking care of questions that they might want to raise about the course content as well as about procedural matters. Student reaction would indicate the need for having a responsible staff member available on each campus to whom students could address questions. This person need not attend the televised lectures but should have regular office hours which would permit students to contact him if they have questions to ask about course content. It is also important that some responsible person, well-informed and interested in the procedural aspects of the televised course, be present at the viewing rooms to pass out assignments, course materials, examinations, and to answer questions pertaining to these materials. These arrangements can be handled in various ways but they do have important implications regarding the development of self-contained inter-institutional television courses. Further indication of the nature of students comments are presented in Appendix A, Tables 77 and 78.

Post-experimental acceptance of inter-institutional television instruction by students enrolled in the televised Appreciation of Literature course

Table 40

PROPORTIONS OF APPRECIATION OF LITERATURE STUDENTS WHO REPORTED POST-EXPERIMENTAL ATTITUDES OF ACCEPT, UNDECIDED OR OPPOSE TO INTER-INSTITUTIONAL TELEVISION INSTRUCTION

	Fall Term			
	Accept	*Undecided*	*Oppose*	*N*
OCE[1]	52% (17)	24% (8)	24% (8)	33
OSC	53% (38)	26% (19)	21% (15)	72
UO	82% (97)	13% (16)	5% (6)	119
			Chi square†=21.722*	
	Winter Term			
	Accept	*Undecided*	*Oppose*	*N*
OCE	71% (17)	4% (1)	25% (6)	24
OSC	62% (41)	20% (13)	18% (12)	66
UO	84% (96)	5% (6)	11% (13)	115
			Chi square†=10.505*	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon.

† Undecided and oppose were combined in computation of Chi square.

* Significant beyond the 5% level.

Table 40 shows the levels of student acceptance for the televised course in Appreciation of Literature which originated from the University of Oregon. A majority of the students at the receiving campuses and the originating campus indicated acceptance of Literature on inter-institutional television. The majority was higher at the originating institution than at the receiving institutions. There was an increase in acceptance at the receiving institutions during the second term of the sequence. The overall test of differences was statistically significant beyond the 5% level both terms.

A substantial proportion of the students were enrolled in the course for the entire year although there was some shifting between terms. It should also be pointed out that enrollment in the television sections did hold up at the two larger institutions, which seemed to indicate that students will take a course via television even though other conventional home-campus sections are available.

Item analyses of questionnaire data regarding Literature are presented in Appendix A, Tables 79, 80 and 81. Among other things, the data indicated that a majority of students showed preference for televised instruction over conventional instruction for the subsequent terms in this particular Literature sequence.

The basic determinants of favorable attitudes toward the course were: the adequacy of the professor, the well-presented and interesting lectures, the large amount of material that was covered, satisfaction with guest speakers and panels, and the interesting use of visual aids. Other factors were listed as advantages of the course by students who took it.

Post-experimental acceptance of inter-institutional television instruction by students enrolled in televised English Composition course

Table 41

PROPORTIONS OF ENGLISH COMPOSITION STUDENTS WHO REPORTED POST-EXPERIMENTAL ATTITUDES OF ACCEPT, UNDECIDED OR OPPOSE TO INTER-INSTITUTIONAL TELEVISION INSTRUCTION

	Accept	*Undecided*	*Oppose*	*N*
FALL TERM				
OCE[1]	30% (27)	28% (26)	42% (39)	92
OSC	70% (26)	22% (8)	8% (3)	37
UO	52% (43)	21% (17)	27% (22)	82
			Chi square =23.042*	
Student attitudes by separate sections[2]				
OCE				
Sec. I	48% (10)	33% (7)	19% (4)	21
Sec. II	28% (7)	20% (5)	52% (13)	25
Sec. III	29% (7)	33% (8)	38% (9)	24
Sec. IV	14% (3)	27% (6)	59% (13)	22
			Chi square=10.103	
OSC				
Sec. I	75% (12)	6% (1)	19% (3)	16
Sec. II	67% (14)	33% (7)	0% (0)	21
			Chi square†=.035	
UO				
Sec. I	45% (9)	30% (6)	25% (5)	20
Sec. II	55% (11)	10% (2)	35% (7)	20
Sec. III	52% (11)	24% (5)	24% (5)	21
Sec. IV	57% (12)	19% (4)	24% (5)	21
			Chi square†=.684	
WINTER TERM	*Accept*	*Undecided*	*Oppose*	*N*
OCE[1]	30% (27)	21% (19)	49% (44)	90
OSC	53% (25)	15% (7)	32% (15)	47
UO	47% (31)	15% (10)	38% (25)	66
			Chi square=8.423	
Student attitudes by separate sections[2]				
OCE				
Sec. I	46% (10)	18% (4)	36% (8)	22
Sec. II	32% (11)	12% (4)	56% (19)	34
Sec. III	18% (6)	32% (11)	50% (17)	34
			Chi square†=5.063	
UO				
Sec. I	43% (6)	14% (2)	43% (6)	14
Sec. II	36% (5)	7% (7)	57% (8)	14
Sec. III	47% (8)	12% (2)	41% (7)	17
Sec. IV	57% (12)	24% (5)	19% (4)	21
			Chi square†=1.686	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon.

[2] These sections are not necessarily the same as were reported for the fall term.

† Undecided and oppose were combined in computation of Chi square.

* Significant beyond the 5% level.

Technical failures were listed as a disadvantage by one receiving section. The only significant technical failures during the two year project, however, were experienced by one section of Literature at Oregon State College. The failures were due to some construction work near the viewing room which several times caused failure in the power supply. The television receiving room was also adjacent to some IBM equipment which may have caused minor difficulty in reception. Another disadvantage expressed by students was the lack of opportunity for asking questions during the television lectures and the lack of personal contact with the television professor. It should be pointed out, however, that the concern about these factors was not sufficiently significant to affect student attitudes negatively toward inter-institutional televised instruction for the Literature course.

Table 41 shows the level of acceptance for inter-institutional television instruction reported by students in the English Composition sections at the various campuses. The data are somewhat at variance with the previously noted patterns in which courses were usually received most favorably at the receiving institution. The proportion of acceptance for fall and winter terms at the originating institution was approximately 30%, with an average of 45% indicating opposition. At the receiving institutions there was majority acceptance the first term although acceptance declined somewhat during the winter term. The overall test of differences among institutions was statistically significant beyond the 5% level during the fall term.

The large proportion of opposition by students at the originating institution may be accounted for by the fact that there were no conventional sections available on that compus. All of the English Composition sections were taught on television for the entire year. Many students indicated that they were taking the television course only because there was no other conventionally taught section available. Another factor which may account for opposition, is the fact that many instructors felt that English Composition is not particularly well-adapted to television instruction. Instructor's report that a great deal of student-teacher personal interaction, particularly for evaluation of themes, is necessary for a successful course in English Composition. Such an explanation could account for the fairly high level of opposition, but could not account for the statistically significant differences in the amount of opposition between the originating and receiving institutions.

Level of acceptance by students varied considerably according to the section in which the student was enrolled. Table 41 shows a range in acceptance from 14% in one section at the originating institution to 75% in one section at a receiving institution which was a statistically significant difference beyond the criterion level. The overall test of differences among sections in English Composition at the originating institution was not statistically significant beyond the 5% level.

Enrollment at the receiving institutions might also be used as a criterion of acceptance. The enrollment at one receiving institution was 91-108-112 respectively, for fall, winter and spring. At the other institution the enrollment was 94-90-87 for the respective terms. Although other factors than acceptance might have been operating, this stability of enrollment could indicate that students will elect courses by television even when other conventional sections are available.

In summary, the comments with respect to the advantages of television instruction in English Composition were similar to those in the other courses; i.e., the professor was well-prepared, the course required attention, more material was covered. The basic disadvantages were that there was no opportunity to ask questions during the lectures and that there was no interaction possible with the television professor.

Specific item analysis and comments of students enrolled in English Composition are presented in Appendix A, Table 82 and 83.

Tables 42, 43 and 44 indicate the proportions of preference for origination from home campus professors and from professors at other institutions. The tables represent student preferences at the end of the first and second terms of inter-institutional television instruction. The most noticeable items on the tables are the high proportion of preference for home-campus professors; the high level of preference for origination of Chemistry from Oregon State College; and the high level of acceptance for inter-institutional television instruction of Education students at Oregon College of Education. A significant exception to the pattern of preference for home campus professor is the response of Chemistry students at the University of Oregon for the consecutive quarters during the experiment. This prefer-

Table 42
PERCENTAGE OF EDUCATION STUDENTS INDICATING PREFERENCE FOR ORIGINATION FROM A SPECIFIC INSTITUTION

		Institution of Respondent							
		Fall Term				Winter Term			
		OCE[1]	*OSC*	*UO*	*Chi square*†	*OCE*	*OSC*	*UO*	*Chi square*†
Institution Preferred for Origination	OCE	66	49	58	3.90	96	54	44	23.62*
	OSC	63	55	64	2.27	88	67	47	17.10*
	UO	71	47	75	23.75*	84	57	66	4.54
	N=	OCE (35)	OSC (120)	UO (144)		OCE (25)	OSC (28)	UO (166)	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon.

† The computation of Chi square is based upon two categories; proportion of preference which is shown in the table aid proportion of undecided and oppose which are not shown in the table.

* Significant beyond the 5% level.

Table 43
PERCENTAGE OF HISTORY STUDENTS INDICATING PREFERENCE FOR ORIGINATION FROM A SPECIFIC INSTITUTION

		Institution of Respondent					
		Fall Term			Winter Term		
		OCE[1]	*UO*	*Chi square*†	*OCE*	*UO*	*Chi square*†
Institution Preferred for Origination	OCE	65	16	23.68*	58	16	18.80*
	UO	38	76	12.71*	35	72	12.99*
	N=	OCE (27)	UO (73)		OCE (36)	UO (66)	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon.

† The computation of Chi square is based upon two categories; proportion of preference which is shown in the table aid proportion of undecided and oppose which are not shown in the table.

* Significant beyond the 5% level.

Table 44
PERCENTAGE OF CHEMISTRY STUDENTS (1957-58) INDICATING PREFERENCE FOR ORIGINATION FROM A SPECIFIC INSTITUTION

		Institution of Respondent									
		Fall Term					Winter Term				
		OCE[1]	*OSC*	*UO*	*WU*	*Chi square*†	*OCE*	*OSC*	*UO*	*WU*	*Chi square*†
Institution Preferred for Origination	OCE	67	22	29	28	32.997*	67	27	20	31	29.90*
	OSC	65	71	74	70	1.069	65	67	71	65	.55
	UO	42	27	27	43	6.096	25	30	30	44	3.92
	WU	28	31	29	63	16.132*	19	31	22	59	20.18*
	N=	OCE (46)	OSC (124)	UO (55)	WU (40)		OCE (48)	OSC (83)	UO (52)	WU (41)	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

† The computation of Chi square is based upon two categories; proportion of preference which is shown in the table and proportion of undecided and oppose which are not shown in the table.

* Significant beyond the 5% level.

ence is related to the high level of acceptance indicated for the professor who taught the televised Chemistry course. A number of the differences among institutions were statistically significant beyond the 5% level.

Organizational factors that seemed to affect student attitudes toward inter-institutional television instruction

Attitude of home-campus discussion-instrucor

One important factor was the attitude of the home-campus discussion - instructor toward inter - institutional televised teaching. His feeling regarding the televised courses seemed to have some effect on student attitude. In one instance, instructors were rated by several observers in terms of their attitudes toward inter-institutional television instruction. It was found that the attitudes of the students in the classes seemed to be highly related to the attitudes of the discussion-instructors. Students were significantly more negative to television courses in those sections where the discussion-instructor's attitude was considered to be unfavorable to televised teaching than where he was rated neutral or favorable. As might be expected, then, student attitudes were significantly more favorable to television in those classes in which the discussion-instructor was rated favorable. In addition to the comparisons of ratings from which the above analyses were made, informal evidence gathered by observation strongly confirms that some relationship exists between discussion-instructor attitude and student acceptance of televised courses.

The question of cause and effect of this relationship becomes extremely significant in the development of future instructional patterns in televised teaching. It seems reasonable to assume that the effect was largely that of discussion instructor influencing student attitudes rather than students influencing the attitude of the instructor, although the latter is possible.

Discussion-instructors' reports generally indicated strong dissatisfaction with their respective roles and status as discussion leaders. They expressed some concern at being a mere viewer of another teacher's lecture and indicated that their participation as only a discussion leader did not give them a feeling of true involvement in the course. Although there seems to be some indication that the degree of acceptance by students is affected by the attitudes of the local discusison-instructor, there is no evidence that the structuring of student attitudes was deliberately undertaken by any instructor. Students themselves, when asked, generally reported that the instructors in the discussion sections did not attempt to influence their attitudes. Whatever the influence, it seems to be quite undeliberate and the result of subtle, indirect factors. Because of this, discussion-instructor attitude is a difficult variable to control in evaluating televised instruction as set up in the Oregon Project.

Coordination between televised presentations and discussion sections

A review of comments from student questionnaires would indicate it desirable to have close coordination between television presentations and discussions sections when "live" discussion sections are handled by instructors on each campus. In some instances in the Oregon Project, negative student attitudes might be explained by the lack of such cordination, particularly on "receiving" campuses.

Communication between the television professor and the discussion-instructors is part of the problem of coordinating televised and discussion sections. Any breakdown in communication between the television professor and the discussion instructor, unexplained deviations from an announced outline or schedule and other factors which tend to disturb the discussion-instructors and receiving students, can result in some negative attitudinal reactions on the part of the student toward the televised course and its handling.

An analysis of comments made on questionnaires completed by discussion-instructors showed their concern in having little control over the instructional situation. Since the television professor had to assume final responsibility for preparation and presentation of the course, it was impossible and impracticable for him to discuss all aspects of the course with all personnel. Discussion-instructors, therefore, sometimes felt "left out" and "superfluous". They did not know specifically what would be covered by the televised lecture, they felt a need for some greater involvement in course planning, and they often found it hard to relate the discussion to a lecture which had been planned by someone else. There was apparently some difficulty in adjusting to the role of a discussion leader by those persons who had been accustomed to full teaching responsibility in the college classroom. It might be assumed that some of the basic dissatisfaction of some of the discussion leaders had an effect on student attitude.

It is difficult to determine whether lack of coordination between television and discussion instruction is an inter-institutional factor. It is probable that the inter-campus factors were a secondary, although aggravating factor, and that the main obstacle to acceptance of the instructional situation was inherent in the situation in which regular staff members were used in a supplementary discussion role. On the basis of experience gained in the Oregon Project, it seems reasonable to conclude that use of regular staff members to conduct supplementary discussion sections of a televised course is not a satisfactory means of instructional organization.

The relationship between student attitude and method of instruction

A change in instruction of General Chemistry was introduced during the second year of experimentation. The course was presented entirely on television; there was no supplementary conventional discussion or laboratory sections. All lectures and laboratory demonstrations were carefully planned for televised presentation exclusively. The first year of televised Chemistry had included supplementary conventional discussion and laboratory sections handled by "live" instructors on each campus. By comparison, the data indicated a high level of student acceptance for televised Chemistry during both years and with both methods of instruction.

There seemed to be no appreciable difference in acceptance of Chemistry associated with mode of instruction at the receiving institution. At the originating institution, however, student attitudes were substantially more accepting the second year when the course was completely televised. It is not clear whether the difference can be accounted for by the change in instructional organization or whether it is due to other factors.

The third term of U.S. History was presented entirely on television in contrast to the first two terms which were a combination of televised and conventional instruction. Student reports from the originating institution indicated majority acceptance of a completely televised course. Student reports from the receiving campus, however, indicated a preference for a combination of televised and conventional instruction for inter-institutional courses. Generally, student acceptance did not seem to vary with the mode of instruction. Rather it seemed more related to the general patterns of acceptance that had existed on the separate campuses. Other factors seemed to be operating to affect attitudes beyond instructional organization.

A comment regarding the role of the television professor in a completely televised course might be appropriate at this point. In such a course much more responsibility is placed upon the television professor for anticipating student problems and questions regarding content and organizational factors. Student comments would indicate that they feel a televised course should outline all instructional arrangements in great detail since questions cannot be asked and answered immediately. Further, in such an instructional situation, it is especially important that a responsible staff member be designated as a contact and be available on the receiving campus to answer questions that students might have concerning the basic subject matter of the course.

General faculty attitudes as they relate to student attitudes

Informal evidence tends to indicate that the general attitude of the staff on a given campus can have some influence on student acceptance of televised instruction, particularly through the advisory process. The extent to which this is an important variable that significantly influences student acceptance must be determined empirically before substantial generalizations can be made.

Student attitudes as they relate to television reception difficulty

In the discussion of technical feasibility of television instruction, it was stated that, with few exceptions, the research has demonstrated conclusively that such instruction is technically feasible. The "few" exceptions occurred in one of the Appreciation of Literature sections on one of the campuses. One of the sections receiving Literature on this campus apparently had no picture failures; the other section had a few picture failures each term. Analysis of attitudinal data indicated a slightly lower level of student acceptance for inter-institutional televised instruction in the section which had experienced the picture failures. The differences cannot be accounted for only by reception problems since there was also the variable of having different discussion-instructors. It can probably be concluded, however, that repeated difficulty in television reception during a course would have a negative effect upon student atitudes toward televised instruction.

Instructional factors related to television as a teaching medium and their relationship to student attitudes[1]

Student attitudes toward televised teaching seemed to be influenced by various instructional factors which can be considered as part of the learning context. The more important factors are dealt with in the following discussion.

Student-teacher relationship and contact

A significant factor affecting attitudes was student concern over not being able to ask questions during the lectures and not being able to develop even a brief personal relationship with the television professor. Actually, students seemed to consider the lack of opportunity for asking questions and for not having a relationship with the professor as being the same type of limitation; i.e., most students who were concerned about one were also concerned about the other. It may be that this is as much related to the personality patterns of the students as to the instructional arrangements.

Knowing that students were concerned about not having personal contact and acquaintance with the television professors, an attempt was made during the first year of the experiment to give the students an opportunity to meet and talk with the professors. Shortly after the beginning of the televised course in U.S. History, an informal dinner meeting was arranged to which the students in History on receiving campuses were invited. Students were told that the dinner would cost them nothing and that transportation would be provided to the meeting. An early evening dinner was planned so students could meet the television profesor personally before dinner; so he would give a short talk about the course after dinner and could be asked any questions by the students; and, so they could talk with him personally and informally for as long as they wanted after the question period. Students were urged, but not required, to attend the dinner meeting. Only about half of the students did avail themselves of this opportunity to meet the television professor and some of those who did come left early because of previous engagements.

Since the dinner meeting for the History students was not particularly successful, the idea was abandoned in favor of some informal coffee hours which were held on different campuses. These were held at what was thought to be a convenient and non-conflicting hour. Students were told that these would give them a good chance to meet the television professor and to talk with him personally. Unless students were required to attend, however, the turnouts at these coffee hours were disappointingly small. Students obviously did not want to take time out to meet and chat with the television professor if it meant extra out-of-the-classroom time on their part. These attempts to personalize or humanize the television professor were, then, discontinued as an unsuccessful method of introducing an opportunity for personal contact between student and professor.

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[1] A doctoral dissertation, *A Comparative Study of the Difference of Attitudes of Students Viewing History and Chemistry Television Courses*, was carried out as a part of the Oregon Project. The conclusions of the study are listed in Appendix B. They generally confirm, or supplement the discussion of instructional factors reported in this section.

There is some indication, however, that planned "in-class" contact affects the degree of acceptance for the television courses and the television professor by students at the receiving institution. In one instance, attitudes registered toward the television course changed from negative to favorable, after the television professor had conducted a face-to-face session with students at one receiving campus in a manner which was deliberately designed to modify attitudes. He engaged in a television discussion with students on the campus and personally visited discussion sections to talk with students. Such actual participation at the receiving campus by a television professor merits considerable future experimentation.

It should be noted that in the better accepted courses, primarily Chemistry and Literature, the students evidenced much less concern about asking questions and about a personal relationship with the television professor than they did in the less accepted courses. In Chemistry, pre-experimentally, approximately 70% of the students indicated concern about not having an opportunity to ask questions and about the lack of personal relationship with the professor. Post-experimentally, attitudes seemed reversed, and 70% stated that they were not concerned with these factors.

It is possible that the degree of concern over these factors can be one criterion which differentiated a "well-received" and a "poorly-received" course.

Comparisons of the effectiveness of conventional and televised instruction

The following is a summary of student comparisons of specific aspects of televised instruction and conventional instruction. The comparisons were reported on questionnaires completed by students enrolled in English Composition, Appreciation of Literature and General Chemistry during the winter term 1958-59. The supporting data is presented in Table 85, Appendix A. Similar data was collected during the fall term, but it is not presented since generally, it does not differ appreciably from the data in Table 85. Because of the similarity in student response during two different terms and with partially differing samples, Table 85 can be considered as a basis for generalization beyond the specific term in which the data was collected.

A majority of the students in all courses, with the exception of English Composition students at Willamette University, estimated that televised lectures were as good as, or better than, lectures in conventionally taught classes.

A majority of the students in the courses, except for English Composition at Willamette University, estimated that standards of student achievement in a televised course were as good as, or better than, standards of student achievement in conventional courses. A larger proportion of English Composition students, than in the Chemistry and Literature courses, however, reported that student achievement seemed to be inferior in televised courses. A small number of students only, reported that standards of student achievement were better in the televised English Composition course than in conventional courses. At Willamette University, the majority felt that standards of student achievement in a televised course were inferior to standards in conventional courses.

In most instances, a majority of the students reported that student-teacher relationships were less adequate in televised instruction than in conventional instruction. Exceptions to this were reported by Chemistry and Appreciation of Literature students at the originating institutions. A significantly larger proportion of those students reported that student-teacher relationships in a televised course were about the same as in conventional courses. Since this reaction refers only to the originating institutions of the televised courses, the fact that the television professor could be available to the students might have had some influence on their attitudes.

A large majority of students in all courses, except English Composition at Willamette University, estimated that the quality of teaching standards in televised instruction was as good as, or better than, the conventional instruction.

Generally, a majority of students felt that televised instruction was as good as, or better than, conventional instruction in stimulating discussion.

A large majority of students in all courses reported that the use of visual aids in televised instruction was as good as, or better than, in conventional instruction.

Analysis of student comments show, as a matter of fact, that the superior use of demonstrations, visual aids, panels, and other types of "close-up" viewing were related to the favorable development of student attitudes toward televised instruction. In some instances, even when the course itself was not favorably received by a majority of the students, many indicated satisfaction for the manner in which visual aids were utilized. Satisfaction with the use of visual aids, of itself, seemed not sufficient, however, to insure a high level of student acceptance for a course.

Generally, a majority of students in Appreciation of Literature and Chemistry reported that satisfaction obtained by students from televised instruction was as good as, or better than, that of conventional instruction. (Chemistry was presented entirely on television; Appreciation of Literature was a combination of televised and conventional instruction.) A smaller proportion of students in English Composition felt that student satisfaction obtained from televised instruction was equal to that of conventional instruction. (English Composition was a combination of televised and convention instruction.) At Willamette University, a majority of English Composition students reported that student satisfaction was less for televised instruction.

A majority of students in Chemistry, Appreciation of Literature, and English Composition at Oregon State College and the University of Oregon reported that televised instruction was as effective as, or better than, conventional instruction in stimulating student learning. The majority of students in English Composition at Oregon College of Education and Willamette University reported that televised instruction was less effective than conventional instruction in stimulating student learning.

In summary, the majority of students in Chemistry and Appreciation of Literature seemed to feel that televised instruction was equal to, or better than, conventional instruction with respect to the specific factors indicated, except for the factor of the student-teacher relationship. Generally, a much smaller proportion of students enrolled in the English Composition courses felt that televised instruction was equal to conventional instruction with respect to the specific factors mentioned above. For the most part, students in English Composition at Willamette University felt television instruction to be inferior to conventional instruction with regard to the specific learning factors mentioned.

Another factor of instructional effectiveness might be mentioned at this point. During the first year of the Oregon Project, there was concern expressed over the ability of televised teaching to command attention of the students in the classrooms. To determine the degree of attention in televised and conventional courses, an observational study of student attentiveness was carried out as a master's thesis. The results of the study indicated that the degree of attention of students in a satisfactorily presented television course was very high. (Student comments also indicated, usually as an advantage, that television forced them to pay attention since they knew that they could not ask that the material be repeated and would have no chance to obtain the material firsthand again.) Specific results of the attention study are summarized as follows[1].

A high degree of attentive behavior was evidenced in both televised and conventional sections of a course which was primarily lecture in nature.

A high degree of attentive behavior was evidenced in the televised section of a course which was primarily lecture-demonstration in nature.

A slightly less degree of attention was evidenced in the televised section of a course in which students generally had unfavorable attitudes toward the presentation of the course on television.

Specific determinants of attitudes as reported by students

In some questionnaire items the students were asked to indicate directly the bases upon which they felt their attitudes toward inter-institutional television were formed. The following is a summary of student responses to these questions. The supporting data is found in Table 86, Appendix A.

A majority of students in both the best-accepted, and the least-accepted television courses, reported that their feelings about the course content were a major determinant of their attitudes toward televised instruction.

A majority of the students reported that the fact of origination of a course from another campus was not a basic determinant of their attitude toward inter-institutional televised instruction.

A substantial proportion of students in all courses were undecided about whether their attitudes were related to the attitudes of the discussion-instructors on their own campus. The proportion which reported that their attitudes were not related to those of their discussion-instructor was generally larger than the proportion indicating some relationship between student attitude and discusion-instructor attitude.

Students were also asked about their feelings toward their discussion-instructor and whether this influenced their attitudes. In Appreciation of Literature and English Composition, except at Willamette University, a sizeable proportion of students reported that their attitudes toward television had some relationship to their feelings about their discussion-instructor. A smaller proportion reported that their attitudes were not related to their feelings about the discussion-instructor.

A majority of the students reported that their attitudes toward televised teaching were not based upon what other students said about televised instruction.

Although a sizable proportion of students reported that their feelings toward television were related to the grade that they expected to receive in the course, the majority was undecided, or did not feel that there was a relationship between the grade they expected to receive and their attitudes toward televised instruction.

A large majority of the students in the better-received courses indicated that their feeling about the television professor was a basic determinant of their attitude toward inter-institutional televised instruction. Although a majority of the students in the less well-received courses indicated a similar attitude, a substantial proportion in the less well-received courses indicated that their attitude was not related to their feelings about the television professor.

The personality of the television professor and his ability to project himself into the classroom through the medium of television seemed to be an important determinant of student attitudes. In most of the analyses of student acceptance, a high relationship was shown between student acceptance of the professor and acceptance of the course. Student responses to questionnaire items and results of interviews also tend to confirm such a conclusion.

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[1] From an unpublished Master's thesis by Arthur Motz, entitled "Overt Behavior of Students in Television and Conventional Classes dealing with Attention and Non-attention Behavior," University of Oregon, 1958.

An extremely large majority of the students in all classes during the second year of experimentation reported that their attitudes toward televised instruction were not pre-set before they came into the televised course.

In summary, students indicated that their feeling about the professor and the course content seemed to be basic determinants of their attitudes. There was some indication that their attitudes toward inter-institutional televised instruction were related to their attitudes toward their on-campus discussion-instructor and also the grades that they expected in the course.

Students disclaimed as basic determinants of attitudes the factors of origination of a course at an institution other than their own, what other students thought about the course, and the possibility that their attitudes were set before they came into the course.

As a matter of fact, the data often, even if by omission, seemed to indicate that the medium of television *per se* is only one determinant of student attitude. In most instances attitudes are based upon the same factors that determine student attitude toward a conventional course. It must be recognized, however, that certain factors exist in inter-institutional televised instruction which by their very nature affect the organization and instruction of such a course, and which have an effect upon student attitudes.

Stability of student attitudes

The relationship between pre-experimental attitudes and post-experimental student attitudes toward inter-institutional televised instruction

There seems to be some relationship between pre-experimental attitudes and post-experimental acceptance of inter-institutional televised instruction. There is strong evidence, however, which indicates that the student's pre-experimental attitude toward television can be modified by participation in a televised course.

The most striking example of shift in attitude was found in the responses of students in General Chemistry, 1957-58. Pre-experimentally, only a minority of the students at the two large institutions, and a slightly larger proportion at the two other institutions indicated acceptance of televised instruction for General Chemistry. At the end of the first term students responses showed significant increase in approval of inter-institutional televised instruction for Chemistry. A majority of the students at all institutions at the end of the first term indicated a willingness to take such a televised course in preference to a conventional course on their home campus. This level of acceptance remained fairly constant over the entire year with the exception of students at one institution, where specific selective factors influenced student attitude.

Post-experimental responses of History students showed only a slight difference from pre-experimental estimates. This indicates that factors which had operated pre-experimentally seemed to have some influence on the attitudes of History students.

In Education, post-experimental student responses were varied. At two institutions the post-experimental acceptance of students was the same or showed a slight increase over pre-experimental acceptance; at another institution post-experimental acceptance showed a decrease from pre-experimental acceptance. Analyses of student comments tend to indicate that the basic determinant of shift in the latter instance is more related to organizational factors than to televised instruction itself. Initial set, although important seems to be subject to modification.

"Novelty effect"

There is some question whether student attitude toward televised instruction is influenced by a "novelty effect"; i.e., the idea that attitudes are more related to the newness of the use of television for teaching. This might result in initially favorable attitudes which might tend to become less favorable as the novelty of televised instruction diminishes. In the Oregon Project, data has been obtained from two situations from which novelty effect can be considered.

The striking increase in acceptance of Chemistry students for inter-institutional televised instruction has already been mentioned. The data indicated that, with minor fluctuations, this high level of acceptance at three of the participating institutions during the first year of televised instruction remained constant for the period of three terms. At the fourth institution there was a decrease in acceptance which seems readily accounted for by certain selective factors in enrollment of students in the course. Although there was some dropout between terms, student comments indicated that dropout was generally not related to the fact that the course was on television. Student responses on attitude scales for the 1958-59 school year also indicated a constant, high level of approval of the televised Chemistry course.

In addition to the analyses of novelty effect in Chemistry mentioned above, a further analysis was made on a sample of 231 students selected from Literature, Chemistry and English Composition. The mean score of students at the end of the first term of inter-institutional instruction was 60.5; the mean for the same students on a second administration of the attitude scale at the end of the next term was the same, 60.5. Inspection of the scores indicated that there was practically no shift in individual scores and that attitudes were highly constant.

It should be pointed out that these were mean scores taken after the development of fairly stable attitudes. They were not a comparison of pre- and post-experimental scores. There seems to be substantial evidence that attitudes toward televised instruction are relatively stable and do not necessarily undergo "disenchantment".

Relationships between student attitudes toward inter-institutional televised teaching and specific student behaviors or personality characteristics

The relationship between attitudes and scholastic aptitude

On a sample of 109 cases the correlation between attitudes toward inter-institutional television instruction and scholastic aptitude as measured by the American Council on Education Psychological Examination was .009, Pearson-product moment. Such a low relationship tends to indicate that scholastic aptitude is not one of the basic determinants of attitude toward televised instruction.

The relationship between attitudes and specific personality characteristics as measured by the California Personality Inventory[1]

On a sample of 100 students there seemed to be no significant relationships between the personality factors measured by the California Personality Inventory and attitude toward inter-institutional television instruction. The correlations were all of a low order. Further analyses of data involving multiple correlation and analysis of variance are currently being carried out.

The relationship betwween attitudes and grades received in the television course

Although analyses involving attitude and grade received in a course were conducted, the results were inconclusive. Further analyses of these factors are anticipated during the next phase of experimentation.

The relationship between attitude and sex of respondent

Analyses of mean scores and tests for significance of differences on specific questionnaire items showed a slight, but statistically significant difference in attitude toward inter-institutional television according to sex of respondent. In all of the courses offered during the second year of the research, women showed a slightly greater degree of acceptance for inter-institutional television courses than did men.

Summary of the Studies of Post-Experimental Student Attitudes

Post-experimental level of acceptance for inter-institutional television instruction

The data indicated that acceptance of televised instruction varied according to course of enrollment and the institution at which the student was in residence. Some inter-institutional television courses were highly acceptable to a majority of the students at both originating and receiving campuses, to the extent that they freely elected (both verbal and behavioral response) such a course over an equivalent conventional course at their own institution. Some inter-institutional television courses received lower levels of student acceptance, to the extent that a majority of the students indicated that they would have preferred a conventional course on their own campus.

Such results seem further to confirm existing research; i.e., that attitudes toward televised teaching are not generalized attitudes toward an instructional medium, but are rather specific responses to a course in which the medium of instruction was only one of a number of factors.

Acceptance by course of enrollment

A large majority of the students who were enrolled in the Chemistry, courses which were offered for two consecutive years on inter-institutional television, generally expressed a high level of acceptance for inter-institutional television instruction. This high level of acceptance was evidence at the originating and receiving campuses. Their interest and attention was high. On some campuses they selected the televised course over an equivalent conventional section.

Students in the Appreciation of Literature course, at originating and receiving institutions expressed a high level of acceptance for inter-institutional television. They enrolled in the course even though there were conventional sections available on their own campuses. Although there was some shifting among sections, the enrollment of the course stayed constant or increased over the period of the year at both Oregon State College and University of Oregon.

The Education sequence received a differential degree of acceptance. School in American Life was received favorably at the originating institution and one receiving institution; there was only minority acceptance at the other receiving institution. Human Development and Educational Psychology: Learning, respectively, received majority acceptance at the originating institution; minority acceptance at the receiving institutions.

History had a majority acceptance by students at the originating institution; acceptance was considerably less by students at the receiving institutions.

English Composition, with some variations, received only minority acceptance by students at the various institutions, including the originating institution.

Differences in student acceptance according to institution of enrollment

There was a tendency for students at the originating institution to be more accepting of an inter-institutional televised course, than for the students at the receiving institutions. Typically, even in those courses in which there was majority acceptance at both the originating and receiving institutions, the majority was larger at the originating institution.

Acceptance, however, was not always higher at the originating institution. Chemistry, during the first year particularly, received a higher level of acceptance by students at the receiving institutions than by the students at the originating institution. English Composition also received a higher level of acceptance by students at the originating institution than the students at two of the receiving institutions.

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[1] From an unpublished study conducted by Dr. Jack Edling of Oregon College of Education.

Comparisons of student preference with respect to origination of a course reveal that, generally, a large proportion of students approve the idea of "home-campus" origination. There was also substantial preference for origination from those campuses from which the most acceptable courses had originated. In specific instances, where a televised course had been favorably received, a larger proportion of students indicated preference for origination of any following sequences of the course from the institution from which it was being originated, rather than for origination by home-campus professors.

Student preference for inter-institutional television compared to preferences for intra-institutional television

The majority of students, in their direct preference statements, indicated a preference for inter-institutional televised instruction over intra-institutional television were usually very small, generally less than 20%. In student reports, there were practicaly no negative comments with respect to the inter-institutional aspect of instruction.

Strong preferences for home-campus professors and the usually higher level of acceptance for a course by students at the originating institution compared to students at the receiving institution, however, seem to indicate a possibility that intra-institutional might be more favorably compared to inter-institutional than is shown by student responses.

Organizational factors that seemed to affect student attitudes toward inter-institutional television instruction

Analyses indicate that there is some relationship between the attitude of the discussion-instructor toward inter-institutional television instruction and student attitudes toward such instruction. Student attitudes were generally more negative in those courses in which the discussion-instructor was judged to be unfavorable to televised teaching than when he was judged to be neutral or favorable. Any lack of coordination between televised presentations and supplementary conventional discussion sections tended to have a negative influence on student attitudes toward inter-institutional televised courses.

There was no clear-cut relationship between student attitudes toward inter-institutional televised teaching and the organization of instruction. Student attitude did not seem to be related to whether a course was entirely televised or a combination of televised and conventional instruction.

In the one instance where a few reception difficulties were experienced, student attitudes were slightly more negative toward inter-institutional television than in comparable sections which had not experienced reception difficulties.

Instructional factors related to television as a teaching medium and their relationship to student attitudes

A significant factor affecting student attitudes was their concern over not being able to ask questions during the lectures and not being able to develop a personal relationship with the television professor.

Informal attempts to enable the students at the various campuses to become acquainted with the television professor by meeting him personally had little effect on student behavior or attitudes.

Planned "in-class" contacts do seem to have some effect on the degree of acceptance for a television course and the television professor by students at the receiving institution.

In the courses which were favorably received by students, factors such as the quality of lectures, standards of student achievement, quality of teaching standards, the preparation of the television professor, student satisfactions from the course, the ability of the televised course to stimulate student learning were considered to be equal to, or better than, conventional instruction by a majority of students. In those courses which were less favorably received by students, the above factors were also generally considered to be inferior on television compared to conventional instruction.

In practically all courses, the quality of visual aids, the preparation of the television professor, and the quality of the lectures were considered to be as good as, or better than, conventional instruction. In practically all courses the student-teacher relationship was considered less adequate in televised instruction than in conventional instruction.

Student attention was very high in those courses which were favorably received by students. It was less high in courses that were unfavorably rated by the majority of students. One controlled, experimental study showed that attention in a televised section was equal to attention in a conventional section.

Students indicated that their feelings about the television professor and the course content seemed to be basic determinants of their attitudes. Students themselves were undecided about the relationship between their attitudes and the attitudes of their discussion-instructors. They were also undecided about whether their attitudes were related to the grade that they expected for the course.

Students disclaimed as basic determinants of attitudes, the factors of origination of a course at an institution other than their own, what other students thought about the course, and, the possibility that their attitudes were pre-set before they came into the course.

Stability of Student Attitudes

Pre-experimental student attitudes that exist toward inter-institutional televised instruction can be modified by participation in a television course. Attitudes can change in either favorable or unfavorable directions with respect to televised instruction. Attitudes toward television need not necessarily undergo a "disenchantment" effect in which students become less accepting of such instruction as a course progresses.

Relationship between student attitudes and specific personality characteristics

There was no relationship between attitudes toward televised teaching and scholastic aptitude as measured by the

American Council on Education Psychological Examination.

Limited analyses show no relationship between attitudes toward televised instruction and personality characteristics as measured by the California Personality Inventory.

Analyses indicated that women showed a slightly greater degree of acceptance for inter-institutional television courses than men.

In summary, the basic question evolving from all of these analyses is whether inter-institutional factors exist that operate to the detriment of inter-institutional televised teaching by causing students to develop negative attitudes toward such instruction. As indicated, there were differences in student preferences of institutions for origination; some differences in preference for origination by a home-campus professor compared to a professor from another campus; and, differences in acceptance among the originating and receiving institutions. The data tentatively suggest that inter-institutional factors, however, did not act as basic determinants of negative attitudes toward the television project as it was set up. Had it been set up on a different basis, with different institutions selected for origination, attitudes might have been more directly affected by inter-institutional factors. Preferences for home professors seem to be more a function of a "familiarity principle" and an "institutional loyalty" factor than actual opposition to origination from another institution. The data seem to suggest that attitudes are more related to instructional and organizational factors than to inter-institutional factors themselves. Student comments indicate that the net effect of the inter-institutional aspect of instruction probably affected favorable development of student attitudes rather than unfavorable development.

It seems reasonable to conclude that television instruction can be effected in such a fashion that the "built-in" inter-institutional potential biases can be minimized and that acceptance of the program can be primarily a function of instructional factors.

Studies of Faculty Attitudes Toward Inter-Institutional Television Instruction

A basic assumption of the Oregon Project has been that the evaluation of television as an instructional medium on an inter-institutional basis is to a great extent a responsibility of the faculties of the participating institutions. In the final analysis some of the most important determinants regarding integration of television into instructional programs will be related to faculty and administrative attitudes. On the basis of that assumption, then, one of the main emphases of this study has been the exploration and analysis of faculty opinions held toward the use of inter-institutional television for instructional purposes.

Faculty attitudes were considered in three basic categories: (1) attitudes of the professors who actually taught television courses, (2) attitudes of the participating discussion-instructors in televised courses on the separate campuses, and (3) attitudes of the general faculties and administrative staffs toward televised instruction.

Attitudes of Professors Who Taught Television Courses

Each of the professors who had taught on television was asked to write a summary statement regarding his reactions to such instruction. A list of specific questions was given to the professors as a guide for their reports. They were asked, however, to give essentially their own impressions of the factors in their television teaching experience that seemed particularly significant to them. Responses were received from all professors who had taught on television with the exception of one individual whose written comments were delayed since he was on a research grant overseas.

During the first two years of experimentation eight professors actually taught inter-institutional television courses in the Oregon Project. The length of their experience ranged from one term of television teaching, to the teaching of a course on television for two consecutive years. There is little possibility, of course, of quantifying the responses of the television professors since their number is so few and since they were not administered a structured attitude scale. Probably the best summarization of their evaluations and points of view regarding televised instruction and inter-institutional television teaching can be made by presenting selected comments from the statements that they wrote. This will be done in relation to the television professors' general comments regarding television instruction and its future potential, their opinions regarding the inter-institutional factor of televised instruction, and their expressions regarding negative reaction to televised instruction.

Two of the papers written by the television professors are presented in their entirety in the appendix. One was selected because it gives a good impression of some of the problems associated with televised teaching; another, because it gives a detailed, careful description of a positive viewpoint regarding televised teaching. Also included in the appendix is a more detailed and more extensive description of the televised Chemistry course, and of the teacher's reaction, which was prepared by Dr. Wendell Slabaugh when he submitted a complete report at the end of his second year of teaching Chemistry by television.

The statements written by the television professors were generally two-dimensional in nature. They emphasized their own subjective reactions to teaching on the medium and also their perception of the medium as an instructional tool.

The following are excerpts of written comments received from Dr. Wendell Slabaugh, Professor of Chemistry at Oregon State College. A more complete report by Dr. Slabaugh is included in the appendix.

General comments regarding televised instruction:

> The degree of adaptability of general chemistry to the medium of television was quite high...
>
> It would seem that courses in physics and biological sciences could

be taught equally well on television compared to the general chemistry course . . .

In comparing the method of instruction the first year to that of the second year in the general chemistry course, I see a great advantage in having a course entirely produced on television providing the difficulties in making this conversion can be overcome . . .

It appears that enough experience with television has been achieved in our project to indicate its potential usefulness for the instruction of several different types of courses . . . It would seem that an interesting aspect of television instruction which should be further investigated is the search for those instructors who can effectively teach by this method . . . It has been obviously indicated that some of the best classroom instructors are not adequate on television.

I feel the advantages considerably outweigh the disadvantages of televised teaching . . .

Comments regarding the inter-institutional factor of instruction:

What appeared as a rather serious problem in inter-institutional television actually turned out to be no more than an amplification of the type of problems that occur in intra-institutional television teaching. Although I taught only one term of the latter type, I am convinced that if two educational institutions are interested basically in using educational television, that there are no insurmountable problems which will arise in this type of instruction.

If the need and interest arises in which a continuation of teaching by inter-institutional television should arise, I shall be happy to continue this type of instruction. My reason for this statement is based mostly upon the conviction that this type of instruction is not only adequate, but in some respects superior to that offered in conventional instruction.

The pressure of the viewing public is more apparent than real.

If the quality of instruction should fall below a reasonable standard on account of increased enrollment or inadequate staffing, I would like to see inter-institutional courses offered in my area of specialization regularly.

Inter-campus television should be able to handle the large introductory level courses where increased enrollments will require additional need for instruction. It seems that for a course such as general chemistry it would be much more reasonable to provide the formal instruction to some three or four thousand students by one instructor all at one time than to spread out this work among 20 or 30 instructors, many of whom accept the job of teaching General Chemistry as a chore and who devote a minimum amount of time and interest to instructing this particular course.

Comments regarding the disadvantages and negative aspects of televised instruction:

However, there are a number of disadvantages of televised teaching, such as the lack of color, the lack of direct feedback and interplay with the students, and the much higher degree of pressure on the instructor at the time he is doing his teaching. The reluctance in part of many who refuse to participate in the television program may stem from this need for additional effort on the part of the instructor in order to achieve a fair degree of success and satisfaction by this medium.

The following are excerpts of written comments received from Dr. Donald Tope, Professor of Education at the University of Oregon.

General comments regarding televised instruction:

I tried to make a general evaluation of the effectiveness of the lecture by way of television. I felt that my TV lectures were better organized. Certainly the presentation of visual aids was greatly enhanced by the use of television. I had the general impression that the students did not lose anything because they were unable to see the lecturer in person. From my personal standpoint, I never had the feeling of lacking an audience.

Comments regarding the inter-institutional factor of instruction:

I will conclude this statement with another personal reaction. I would say that relatively little was gained by the inter-institutional feature of the television experiment. This was largely due to the failure to develop a close-working rapport among the staff members involved on the various campuses. I feel that such rapport could have been established. However, this would have required a tremendous amount of extra time. I am not convinced that the extra time and effort would have been worth it as far as regular courses are concerned. It might very well be worth it in the case of special lectures and courses unique to a particular campus.

Comments regarding the disadvantages and negative aspects of televised instruction:

In the third place, I recall the matter of strain. Even after several TV appearances I felt very definitely the factor of strain. I still remember the physical discomfort of the first few TV sessions. However, the physical discomforts diminished almost to zero before the end of the term for me. The mental factor of strain did not diminish. I do not know just why this was, but the strain was very definitely there.

The following are excerpts of written comments received from Dr. Roland Bartel, Asistant Professor of English at the University of Oregon.

General comments regarding televised instruction:

I found literature surprisingly adaptable to TV teaching . . . surprising because I had been skeptical of the method and had never used lectures exclusively in my own course . . .

In all areas the results seemed as good as, or better than, the results obtained conventionally.

I sometimes wonder what all the excitement is about. It seems quite obvious by now what the place of TV should be in higher education and I see no reason for not using it in areas where it has a place . . .

I found my own TV teaching much more enjoyable and rewarding than I had anticipated, but I still prefer the small or medium-size class taught directly—but this option may not always be available.

Comments regarding the inter-institutional factor of instruction:

Teaching literature inter-institutionally seems rather pointless as long as there are competent teachers on all the campuses.

Comments regarding the disadvantages and negative aspects of televised instruction:

I would not like to continue teaching my courses on TV unless we run short of competent teachers and TV teaching becomes necessary . . . then I would be willing to teach them on inter-institutional TV or intra-institutional TV.

Inability to ask students questions to see if they are thinking or just passively receiving . . .

The following are excerpts of written comments received from Dr. Robert R. Reichart, Professor of Educational Psychology, and Dr. Denis Baron, Associate Professor of Education at Oregon State College. They taught the course in Educational Psychology as a team. Their complete report is included in the appendix so a very few selected remarks only are included here.

General comments regarding televised instruction:

We are sold on the possibilities of the use of this medium.

We are even more enthusiastic now about the potential of TV

> instruction than we were when we ended our "inter-institutional" TV course.
>
> The educational psychology course is certainly one which can be taught effectively over TV. This does not mean that classroom methods may be transferred directly to the TV studio.
>
> Probably any course may be taught and taught well, over TV. This is clearly a question that should be answered by experimentation rather than opinion.

Comments regarding the inter-institutional factor of instruction:

> Most of the seeming disadvantages which have been pointed out in this area are manufactured disadvantages, not real ones...
>
> We see great possibilities for inter-campus television instruction in the future...

General comments regarding disadvantages of televised instruction:

> The major disadvantage of what has been done so far is putting on the programs before these programs were really ready...
>
> One disadvantage of TV teaching, as we have practiced it, is that students have been forced to come to class to look at us as though they were attending regular class sessions... This may have helped produce an attitude antagonistic to TV teaching.
>
> We found that a TV course produced great stress and tension.

The following are excerpts of written comments received from Dr. David S. Brody, Professor of Psychology, Oregon College of Education.

General comments regarding televised instruction:

> In expressing my feelings about the importance of the personal element in teaching, I do not wish to imply that television has only limited value in higher education. I believe that television has a great deal to contribute and that we should continue our experimentation with this medium. I for one would like to see much more use made of television in supplementing and enriching instruction in the regular classrooms. I would also like to see its use extended in teacher-education programs to permit more adequate observations of teaching for students who are enrolled in Methods Courses...
>
> I find that I did learn a great deal from my experience in teaching by TV and certainly believe that it has value as part of the instructional program...

Comments regarding the disadvantages and negative aspects of televised instruction:

> As I compare my teaching by television with that in the regular classroom, I have no question but that my major dissatisfaction with TV instruction was to be found in the lack of interaction with students. To me the relationship of teacher and student is of vital importance to the learning process if learning is to lead to understanding and insight rather than merely the accumulation of factual data. I realize, of course, that many instructors may regard the interaction of teacher and student of minor importance, particularly in large classes, and feel they can be just as effective on TV as in the regular classroom. I appreciate the fact that there is evidence which justifies their position...
>
> In my teaching I depend on feedback from students, for I find that their responses, their questions and their feelings (which may or may not be verbalized) provided invaluable clues for modifying teaching procedures and facilitating the communication process.
>
> Both the instructor and the students later reported they perceived me as being much more effective in communicating with them in a regular classroom setting than on TV...

The report of Dr. John Bellamy, Assistant Professor of Humanities at Oregon College of Education, is included in the appendix. His report is quite difficult to abstract in the same fashion as the reports previously presented. Dr. Bellamy emphasizes some of the problems that confront the individual who teaches on television, and, he also gives considerable insight into some of the basic inter-institutional problems of this type of instruction.

Summary of Attitudes of Professors Who Taught Television Courses

Obviously the opinions and judgments of the professors who have taught courses on television must constitute a major criterion for the evaluation of such instruction. The following factors seem noteworthy in summarizing their judgments.

They generally expressed the feeling that televised teaching can make a significant contribution to higher education. At least three of the seven could be characterized as being highly enthusiastic about the possibilities of televised instruction for their specific courses on either an intra- or inter-institutional basis. They felt that televised teaching had a striking potential for the improvement of instruction. Two of the professors can probably be characterized as feeling that televised teaching is quite acceptable; they found that it did not militate against student achievement and were quite willing to continue with televised teaching on an inter-institutional basis if the need arose. Of the remaining professors, one felt that televised teaching had a significant potential for improvement in instruction and many specific uses in education, however, he did not personally feel that the medium was appropriate for him as an individual since he preferred the actual relationship with students in a classroom. The other respondent did not make any evaluations of televised teaching as such, but rather emphasized some of the personal problems associated with the teaching of a particular inter-institutional television course.

Generally, the professors found their courses and themselves to be adaptable to the medium. They felt that there was a gain in terms of preparation and quality of the lecture presentation. They felt that a sufficient amount had been learned about televised instruction to warrant its use in specific areas.

Although three of the professors could be described as being enthusiastic about the inter-institutional factor of instruction, the professors generally did not see an immediate need for the inter-institutional aspect of televised instruction. They felt, however, that it could be developed as a significant factor in higher education if staff shortages and needs developed.

The professors' concerns about televised instruction were related primarily to the fact that there was no inter-personal relationship with students and that there was no feedback in class from which they could immediately judge their teaching effectiveness. In two instances, the major dissatisfaction reported with televised teaching centered around the fact that expectations of, and relationships with colleagues at other institutions were such as to make television teaching a rather discomforting experience.

Analysis of the Attitudes of Discussion-Instructors in Televised Courses[1]

As has been previously stated, the instructional pattern for television teaching in the Oregon Project basically involved a combination of televised and conventional instruction. Generally, two lecture-demonstrations were presented by television and one supplementary on-campus discussion section was held during each week of classes. In most instances regular staff members were engaged as discussion-instructors. They were faculty members who were regularly teaching in the subject which was televised.

Since these discussion-instructors were an integral part of the instructional plan, it is important that their attitudes toward the televised course work be reported. Data gathered from questionnaires completed by the discussion-instructors and from informal interviews are presented in the following discussion.

Discussion-instructor reports on appropriateness and effectiveness of televised instruction

Discussion-instructors in Chemistry at the state institutions reported that the televised Chemistry course was effectively taught by inter-institutional television. There was general agreement among them that Chemistry in terms of content and adaptability to the medium was appropriate for inter-institutional televised instruction.

At Willamette University, the Chemistry course was reported to be less effective in meeting student needs, because the students at that campus were primarily pre-science majors and had a different level of abilities than students at the other campuses who were taking Chemistry as a terminal course.

History was generally considered appropriate for televised instruction in terms of course content and adaptability to the medium. It was reported that History courses could be effectively taught by television.

Participating Education instructors were divided in opinion regarding the effectiveness of televised instruction for Education courses. Approximately half of them reported Education courses were not effectively taught on television. Others reported that televised instruction seemed to be effective, but they indicated concern about intangible factors of learning not measured by achievement tests. Approximately half of the fourteen participating instructors in Education indicated that they felt Education courses by nature of content, objectives, philosophy, were inappropriate for televised instruction.

The discussion-instructors receiving the English Composition lectures were somewhat divided in opinion concerning the effectiveness of televised instruction. The majority felt the televised lectures to be less effective in terms of student learning than conventional methods of teaching Composition. A minority at the originating institution were satisfied with the televised course and felt that English Composition could be effectively taught on television.

The majority of the instructors in English Composition felt that the course was inappropriate for televised instruction and that other courses might better be taught on telesion.

Televised instruction was reported to be highly appropriate for Appreciation of Literature. Participating staff members generally indicated that quality of instruction was good and that student learning was equivalent to that of conventional classes. They felt Literature was appropriate for televised instruction in terms of content and adaptability to the medium.

Discussion-instructor reports regarding television for improvement of instruction

Discussion-instructors in Chemistry reported three factors that operated to improve the quality of instruction: (1) the effective use of television for "close-up" viewing of lecture-demonstrations; (2) the superior use of other visual aids; (3) the excellent preparation of the television professor. They did report that televised instruction increased the problems of coordination between lecture and laboratory sessions. The latter, of course, was not a factor during the 1958-59 school year as the Chemistry course was presented entirely on television.

The majority of Education instructors felt that superior use of visual aids and the excellent preparation of the television professor were factors of improvement. These, however, were counteracted by the loss of the personal relationship with the instructor and the loss of social learning that takes place within Education classes. A minority felt that exploration of television in the future, with serious efforts to adopt new techniques of instruction, might have potential for improvement of instruction and presentation of courses.

English Composition instructors felt that any benefit in terms of improved lecture and preparation was lost because a course in Composition demands personal contact and interaction between student and teacher.

Literature instructors felt that televised Literature was as good as, or better than, conventional instruction. They especially mentioned such factors as the excellent preparation of the professor, student attention, and use of audio-visual aids. They felt that the student-teacher relationship was less adequate on television, but since Literature could be effectively presented by the lecture method, they felt that instruction might be improved by proper use of television.

Discussion-instructor reports regarding determinants for originating a television course from a particular institution

In most cases the participating faculty members reported they did not necessarily feel that origination should be from their respective campuses. There was a strong feeling on the part of several respondents that teaching should involve more than one individual, however, and that instruction and planning should be shared among staff members at different institutions.

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[1] The data represent the attitudes of the majority of the discussion-instructors although there were a few who did not return the questionnaires. Since Chemistry was offered entirely by television in 1958-59, the opinions regarding Chemistry instruction are confined to the first year (1957-58) in which it was taught by a combination of televised instruction and conventional laboratory and discussion section.

Participating instructors generally reported that the determining factors of origination for televised instruction should be (1) the ability of the television lecturer; (2) the amount of equipment and plant available that would enhance the lecture; (3) benefit that would accrue to the receiving institutions; (4) the appropriateness of the course to the medium of instruction; (5) opportunity for staff members at the various institutions to gain experience in teaching by television.

Discussion-instructor reports regarding participation in televised course

In the initial planning of the televised courses, administrators and staff members on each campus strongly felt the courses should not be offered entirely by television. They preferred that the televised lectures be supplemented by conventional discussion sections handled by appropriate faculty members at each institution. Although this method of instruction was followed, it was not completely satisfactory from an operational and administrative point of view.

The majority of the discussion-instructors at the receiving campuses, who were regular staff members at their respective institutions, reported that they preferred not to be involved as discussion instructors in any future televised courses. The reasons stated for their dissatisfaction are many and varied. Some of these have already been discussed in other sections of this report. In summary, they seemed to be such factors as differences in philosophy about how a course should be taught, and the essential nature of its content; a general feeling of lack of control and autonomy over the instructional situation; difficulty in directing discussion in response to television lectures; a strong feeling of being merely an onlooker into the course of another person; feeling that their talents and ability were not being used to best advantage. There is considerable evidence that the use of regular staff members as discussion-instructors is not feasible as a basis for the organization of instruction. There was less opposition to the role of discussion-instructor by staff members who were on the campus where the course originated.

Discussion-instructor reports regarding continuation or expansion of televised instruction

The majority of the participating discussion-instructors in Education did not recommend continuation of inter-institutional televised instruction for Education courses. A minority recommended continuation under different experimental conditions.

In Chemistry, although television instruction was reported to be adequate, participating instructors preferred to have the program continued under different experimental conditions.

History was also recommended for continuation under different experimental conditions.

Most of the English Composition instructors, with the exception of a few at the originating institution, recommended against continuation of a televised course in Composition for another year. They reported that further experimentation with Composition would probably be wasteful.

The Literature instructors indicated a preference for having the course repeated for purposes of further experimentation, although they suggested some modification in the instructional arrangements.

Discussion-instructors reported that continuation of the courses should be contingent upon the demonstration of an appreciable benefit to the receiving institutions.

In those few instances where graduate students were employed as discussion-instructors, they reported general satisfaction with their role in the televised teaching experiment. Typically, the graduate students were willing to coordinate their activities with the television professor. There were no apparent feelings of differential prestige, or feelings that they didn't have proper knowledge and control of the instructional situation. This favorable reaction may be related to the fact that the graduate students were primarily on the same campus as the television professor. The use of graduate students for the lab and/or discussion sections shows promise, however, and merits further investigation.

Discussion-instructor reports on student attitudes toward televised teaching

Discussion-instructors typically reported that the Education students seemed to be more negative than favorable to the use of inter-institutional televised instruction. History students were reported as being divided in their attitudes at the receiving institution, however, at the originating institution a majority of the students seemed to favor televised instruction. The Chemistry students were generally reported by discussion-instructors at all the participating state institutions as being favorably inclined toward televised instruction. The English Composition instructors reported that the majority of students opposed televised instruction. Literature instructors reported that the majority of students favored televised instruction. They indicated that a substantial number of students preferred the lecture method for Literature and felt television particularly appropriate to this method of instruction.

Participating discussion-instructors reported that the student's feeling toward the television professor seemed to be the basic determinant of student attitude. Student feeling about course content also seemed to be very important. Discussion-instructors felt that their own attitude as section instructors had very little to do with affecting student attitudes. They reported that course origination from another institution seemed comparatively unimportant as a determinant of student attitudes.

Discussion-instructors reaction to the relative amount of time devoted to televised instruction and to conventional discussion

Discussion-instructors in Education did not seem to have any firm preferences regarding the proportion of time allotted to televised instruction compared to the amount of time given to conventional instruction. Education courses had been offered under various conditions with different instructional time patterns. The discussion instructors who reported favorable attitudes toward televised instruction apparently felt that a number of different instructional time patterns might be found satisfactory. The remainder preferred that televised courses in Education be discontinued, and consequently, indicated no strong preferences regarding change in instructional time.

Chemistry instructors, during the first year, reported that the proportion of televised to conventional instruction time seemed appropriate. There was interest in a different experimental condition for the second year, however, involving an increase in the amount of televised time. As previously indicated the Chemistry course was completely televised during the second year.

In History, the time apportioned to televised and conventional instruction did not seem to be satisfactory to the discussion-instructors. During the third term of History instruction, therefore, the entire course was televised without supplementary conventional discussion sections.

Literature instructors reported preferences for increasing the amount of television time for Literature instruction to the point of having all instruction on television. Such comments seem to be based upon factors of saving of staff time and the increased efficiency of instruction.

Although the majority of participating instructors in English Composition recommended discontinuance of the course on television, they reported that they would have preferred a larger proportion than the one-third of course time for conventional instruction that had existed in the experimental program.

Discussion-instructor reports regarding advantages and disadvantages of inter-institutional televised instruction

Discussion-instructors were also asked to indicate what they felt to be the chief advantages and the chief disadvantages of inter-institutional televised instruction. Informal examination of their comments revealed the following ideas as being representative of their feelings.

They felt generally that television courses made outstanding instructors available to a large audience and that these instructors were given the support necessary to do a superior job of preparation, organization of course and materials, and lecturing. The excellent quality of demonstrations and visual aids were reported as being decided advantages. The use of visiting lecturers and distinguished guests was reported as an advantage, as was the fact that the students in this way can get the viewpoint of two or more professors rather than one. Reported as a potential advantage was the possibility of cutting down on "contact hours" in multiple class sections, and the television potential of reaching a large audience. Some reported as advantages the fact that departments on the various campuses were aware of the activities of each other, and that faculty members were provided with an opportunity to observe the teaching methods of others.

The chief disadvantages as reported by discussion-instructor were the loss of student-teacher contact, lack of questions during the lecture, inadequate feedback to the television professor and the inefficient use of regular staff as discussion-instructors. Also mentioned were problems of communication and organization that interfered with the instructional program, problems posed by differing philosophies of instructors teaching the same students, and the danger of aiming instruction at the lowest ability student group.

Discussion-instructors' suggestions for further research in televised instruction

Discussion-instructors were also asked for suggestions regarding future research that might be carried out as part of the television teahing experiment. The following comments seemed representative of their suggestions:

Utilization of guest lecturers.

Demonstration of research work and special facilities in academic areas.

Making professional seminars of unusual interest available to many campuses.

Difference between a good television teacher and a good conventional teacher.

Analysis of "what makes a good television teacher."

Study of the art of communication via television at the college level.

Television for extension courses.

More "experimental" set-up to measure other variables.

Varied procedures for presenting material.

Supplementary personnel to complement television lecturer.

Possible use of kinescope films.

Television teaching of small groups of upper classmen in special subject—self-monitored.

Summary of Discussion-Instructor Attitudes Toward Televised Instruction

Discussion-instructors reported generally that Chemistry, Appreciation of Literature and History can be effectively taught on inter-institutional television. Those courses were considered appropriate for televised instruction in terms of course content and method of teaching.

Discussion-instructors in English Composition, with a few exceptions, reported limited effectiveness of the course on television because of factors inherent in the instruction of the course. The majority felt that the content of the course, and methods required for teaching it, were not particularly appropriate to television.

Discussion-instructors in Education were about equally divided in opinion. Some felt that the content and teaching methods involved in Education courses were not particularly appropriate for television teaching. Others felt that Education courses could be effectively presented on television.

Discussion-instructors reported that television had improved instruction through close-up viewing of lecture-demonstrations, effective use of visual aids and the excellent preparation of the television professor teaching the courses.

Discussion-instructors felt that the most important factors which should be used as a basis for origination of a televised course should be (1) the ability of the television professor; (2) plant and equipment available at the originating institution; (3) benefits that accrue to the receiving institution for such instruction; (4) the adaptability of the course to the medium; (5) opportunity for all institutions to have some opportunity to originate courses.

A majority of the discussion-instructors preferred not to be involved in the same capacity in subsequent television courses. There was general dissatisfaction with the role of discussion-instructor as it had developed.

Graduate students who acted as discussion-instructors generally indicated favorable attitudes toward their roles and toward instructional television.

Discussion-instructors, in the courses which were judged as more effective, generally expressed a preference for a different experimental design for the next phase of experimentation, usually including a larger proportion of time for televised instruction compared with conventional instruction.

Discussion-instructors reported that student attitudes varied according to course of enrollment from favorable to unfavorable.

Generally, the attitude of discussion-instructors toward inter-institutional television seemed to be based upon their roles as discussion-instructors, and their attitudes toward television as an instructional medium, as much as their feelings about the inter-institutional aspect of such instruction. It seems safe to conclude on the basis of discussion-instructor reports, and related informal evidence, that the use of regular staff members as discussion-instructors for a televised course will receive only limited acceptance.

Analysis of the General Faculty Opinions Regarding Inter-Institutional Television Instruction

Introduction

This section is primarily concerned with analysis of general faculty attitudes toward inter-institutional televised teaching. The data and conclusions of the section are based upon information gathered from two questionnaires that were distributed to faculty members at the participating institutions. The "initial faculty questionnaire" was administered during November of 1957, two months after the beginning of the program. The second questionnaire was administered during the spring term of 1959 toward the close of the first two years of the project. The characteristics of the two questionaires are described below.

Purpose of the questionnaire:

The purpose of the initial (1957) questionnaire was to obtain an understanding of the level of acceptance which faculty members had for inter-institutional televised instruction; to provide a basis for determining changes in opinions associated with the development of the program; to acquire information regarding faculty perceptions of television as an instructional medium.

Specifically, the questionnaire was designed to obtain opinions from faculty members about the following factors:

(1) the acceptability of telecasting and receiving college and university courses on an inter-institutional basis.

(2) the acceptability of inter-institutional television compared to intra-institutional television.

(3) faculty perceptions of the effect of television on learning and teaching.

(4) the effect that the use of inter-institutional television would have on specific institutional factors.

(5) the appropriateness of televised instruction for various courses, types of course, and classroom arrangements.

(6) the advantages accruing from televised instruction as perceived by faculty members.

(8) desirable directions for future research.

Initial (1957) questionnaire

The instrument was constructed on the basis of the specification of purposes listed above. It was designed to enable the respondent to make both a quantitative and qualitative, or free-response, estimate of opinions. The quantitative estimate was provided for by a five point scale following most statements. Usually the dimension ranged from "strongly favor" to "strongly oppose" or from "much better" to "much worse".

The questionnaire was not intended to be a scale by which attitudes could be reduced to a single, numerical quantity, indicating a point on the dimension of acceptance-rejection toward inter-institutional television. Such a "refined" attitude scale was not developed because it was felt that it would not have enabled as much understanding of the factors which formed the basis for attitudes as an instrument which was designed primarily for analysis of items. At the same time, however, the scale has ample items that can be scaled following the Guttman technique, or following Likert's procedure wherever this is desirable. The combined quantitative and free-response type of statement enabled faculty to qualify their responses as it was assumed that many faculty members would not submit to a forced-choice, because of their lack of information regarding the research. With the combination, there was a possibility of qualification without the irritant of forced-choice.

Such free-response items were: Why do you feel that way; comment; if yes, please explain; etc. The questions in which the respondent was to indicate advantages, disadvantages and suggestions for future research were all free-response.

Prior to final selection of items, the preliminary forms were submitted for suggestions to the Television Committees

Table 45

DISTRIBUTION OF FACULTY QUESTIONNAIRES

	OCE[1] 1957	OCE[1] 1959	OSC 1957	OSC 1959	UO 1957	UO 1959	WU 1957	WU 1959
Total number of questionnaires distributed.	63	39	560	220	426	210	95	43
Total number of questionnaires returned.	40	36	286	184	226	145	50	28
Percent returned.	63.49	92.31	51.07	83.64	53.05	69.05	52.63	65.12
Questionnaires returned incomplete indicating: staff member on leave; emeritus, not teaching; full-time research; staff member resigned.		6	18	11	8	14		2
Questionnaires returned incomplete marked: "no basis for judgment."			12		10			
Questionnaires returned after analysis completed:		2		4		8		
Final analysis of the data is based upon the folowing number of completed questionnaires.	40	28	256	171	208	123	50	26

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, Universtiy of Oregon; WU, Willamette University.

of three of the campuses. Suggestions and modifications were incorporated as a result of their comments. In addition, preliminary forms were administered to a small sample of faculty members at the University of Oregon. The respondents were asked to make corrections, modifications, and to criticize the items and format generally. The final form of the instrument was then prepared.

Post-experimental (1959) questionnaire

The second questionnaire was sent out in May 1959, approximately a year and one half after the distribution of the initial instrument. Although the second questionnaire was altered somewhat, it covered the same basic items as the initial questionnaire. Free response qualifications were omitted since there was some concern that this had made the initial instrument too long. The post-experimental questionnaire was intended to provide a greater understanding of the attitudes of faculty toward inter-institutional television instruction at the termination of the two year pilot phase of the program. Table 45 shows the distribution of both questionnaires.

Presentation of the Data

The following procedure is used in reporting responses to the two faculty questionnaires: each item is presented as it appeared in the questionnaire; responses to the item are indicated in tabular form; and, analysis of the data for each item follows.

QUESTION: Even though you may not have directly participated in the TV project, how do you feel now about using TV for instructional purposes?

This question was placed at the beginning of the post-experimental questionnaire to obtain an estimate of general faculty feeling toward instructional television. The item did not appear on the pre-experimental questionnaire. The results shown in Table 46 indicate that a majority of faculty at the three state institutions felt instructional television to have some future use in education. Differences among institutions were not statistically significant to the 5% level.

Table 46

POST-EXPERIMENTAL FACULTY OPINIONS REGARDING THE FUTURE OF TELEVISION FOR INSTRUCTIONAL PURPOSES

	OCE[1] N=28	OSC N=171	UO N=123	WU N=26
I have the impression that it is an excellent approach to teaching: it should have extensive future use in education.	7%	17%	14%	0%
I think that it is a pretty good aproach to teaching: it should have some future use in education.	68%	45%	44%	42%
I haven't made up my mind one way or another.	11%	16%	19%	15%
I think that it is a rather poor approach to teaching: it should be used in limited situations only.	14%	18%	19%	31%
I have the impression that it is a very poor approach to teaching: TV should not be used for instruction.	0%	2%	2%	12%
No answer.	0%	2%	2%	0%

Chi square†=6.614

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

† Favorable responses were combined into one category and neutral and negative responses in another category in computation of Chi square. No answer excluded.

QUESTION: Please estimate the number of TV lectures that you have actually observed.

Table 47

POST-EXPERIMENTAL FACULTY ESTIMATES OF THE NUMBER OF TELEVISED LECTURES THEY HAD OBSERVED

	OCE[1] N=28	OSC N=171	UO N=123	WU N=26
None	7%	16%	23%	35%
1 or 2	14%	20%	32%	23%
3 to 5	11%	27%	15%	11%
More than 5	68%	37%	30%	31%

Chi square†=27.459*

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

† None and "1 or 2" were combined in computation of Chi square.

* Significant beyond the 5% level.

Table 47 shows a large majority of respondents from the participating institutions reported that they had observed some of the television lectures. The proportion was largest at Oregon College of Education; smallest at Willamette University. The overall test differences among institutions was significant beyond the 5% level.

QUESTION: Do you think that there should be further experimentation with televised instruction by the Oregon System of Higher Education?

Table 48

POST-EXPERIMENTAL FACULTY OPINIONS REGARDING CONTINUATION OF TELEVISION RESEARCH BY THE STATE SYSTEM OF HIGHER EDUCATION

	OCE[1] *N=28*	*OSC* *N=171*	*UO* *N=123*	*WU* *N=26*
Yes	82%	75%	78%	73%
Don't know	18%	19%	18%	12%
No	0%	6%	4%	15%
			Chi square†=1.084	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

† Don't know and no were combined in computation of Chi square.

According to Table 48 an extremely large proportion of the respondents at the participating institutions reported that there should be further experimentation with televised instruction. Differences among institutions were not statistically significant to the 5% level.

QUESTION: Would you like to experiment personally with teaching one of your courses on inter-institutional TV?

Table 49

FACULTY ESTIMATE OF PREFERENCE FOR PERSONALLY TEACHING ON TELEVISION

	OCE[1]		*OSC*		*UO*		*WU*	
	1957[2] *N=40*	*1959* *N=28*	*1957* *N=256*	*1959* *N=171*	*1957* *N=208*	*1959* *N=123*	*1957* *N=50*	*1959* *N=26*
Like very much	20%	4%	11%	10%	9%	7%	6%	3%
Like	22%	21%	17%	13%	15%	19%	20%	12%
Don't know	30%	32%	35%	38%	35%	36%	26%	38%
Dislike	10%	32%	17%	22%	27%	27%	38%	27%
Dislike very much	5%	7%	4%	8%	9%	9%	10%	15%
No answer	13%	4%	16%	9%	5%	2%	0%	5%
			Chi square†; 1957 Questionnaire=21.218*					
			Chi square; 1959 Questionnaire=2.478					

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

[2] 1957, Initial Questionaire: 1959, Post-experimental Questionnaire.

† Chi square was computed by combining responses into three categories, favorable, dont' know, unfavorable. No answers excluded.

* Significant beyond the 5% level.

This question was designed to obtain an estimate of the number of faculty members who might be interested in actually teaching one of their courses on inter-institutional television, and the bases upon which they made their decisions. Such an estimate seemed useful in planning the later stages of the research as well as giving an indication of the personal acceptability of teaching on television to faculty. The question of whether faculty members would be willing to teach on television has been a recurring question in the current project.

Table 49 shows that initially (1957 Questionnaire) from 24% to 42% of the respondents, according to institution, indicated their interest in teaching on inter-institutional television. From 15% to 48% indicated that they would dislike personally teaching on television. The response to the "don't know" category ranged from 26% to 35%. The overall Chi square test of differences among institutions was statistically significant beyond the 5% level; a higher proportion evidenced an interest at Oregon College of Education.

Analysis of comments made by faculty who indicated dislike of teaching their courses on television showed the following concern: the adaptability of the course of television in terms of subject matter; demands for personal contact with student and teacher; necessity for questions by the students; limited demand because of the specialized nature of the course, particularly on the campuses in which the course is not offered. Others questioned the amount of time that would be available for preparation. There was some concern about one's personal adequacy as a television teacher. Comments were also made indicating a reluctance to make a judgment pending more experimental results.

Very few comments were made by the faculty members who indicated an interest in teaching by television. However, a number of those who registered interest were also concerned about the effectiveness of television instructionally, the need for questions by students and the loss of interpersonal relationship.

Very few comments were made favoring or disapproving the inter-institutional aspect. Comments were directed toward television as an instructional medium.

According to the post-experimental questionnaire, during the research period there seemed to be a slight decrease in the number of faculty members at Willamette University and Oregon College of Education who would be willing to teach on television. At the end of the two-year research program, however, about 25% of the faculty members who answered questionnaires at the three state institutions reported that they would like to experiment with teaching one of their courses on television. Differences among institutions were not statisticaly significant to the 5% level.

It seems reasonable to conclude from these data that a sufficient number of faculty members are willing to teach on television to ensure an inter-institutional program if disagreement regarding organization and reception can be resolved. Observations and interviews during the two year research period also support the idea that there are faculty members who are interested in teaching on television. The problem seems to be obtaining departmental agreement on origination and reception, not in obtaining staff members to teach.

QUESTION: What do you think about having courses in your area of specialization televised from this institution to students at other participating institutions? (Assume that you are not personally teaching on TV.)

Table 50

FACULTY OPINIONS REGARDING ORIGINATION OF COURSES AT THEIR INSTITUTION

	OCE[1]		*OSC*		*UO*		*WU*	
	1957[2] *N=40*	*1959* *N=28*	*1957* *N=256*	*1959* *N=171*	*1957* *N=208*	*1959* *N=123*	*1957* *N=50*	*1959* *N=26*
Srongly favor	18%	0%	10%	7%	9%	6%	4%	4%
Favor	40%	43%	27%	27%	37%	32%	36%	31%
Don't know	32%	29%	28%	31%	27%	34%	22%	23%
Oppose	5%	18%	22%	21%	21%	18%	30%	31%
Strongly oppose	0%	3%	5%	7%	5%	8%	8%	11%
No answer	5%	7%	8%	7%	1%	2%	0%	0%

Chi square†; 1957 Questionnaire=13.651*
Chi square†; 1959 Questionnarie=3.810

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

[2] 1957, Initial Questionnaire; 1959, Post-experimental Questionnaire.

† Chi square was computed by combining responses into three categories: favorable, don't know and unfavorable. No answer excluded.

* Significant beyond the 5% level.

The success of an inter-institutional television instructional program is in part a function of the willingness of institutions, departments and individual faculty members to originate and to receive televised courses. This question was designed to obtain an estimate of the willingness of faculty at the various institutions to have courses in their area of specialization telecast from their schools to other schools. The question assumes that the respondent does not necessarily have to teach the course.

Pre-experimentally the proportion of respondents (Table 50) who favored making their courses available to other institutions via television ranged from 37% to 58%, "don't know" from 22% to 32%, and "oppose", 5% to 38%. The overall Chi square test of differences among institutions was statistically significant beyond the 5% level. Respondents at Oregon College of Education were more favorable than respondents at other institutions.

Opposition was based upon concern over the loss of the student-teacher relationship; a decrease in the quality of the course on television; unadaptability of courses to television because of subject matter, specialization, and lack of demand elsewhere.

Comments indicated the feelings that inter-institutional television courses might be better because they require more preparation, promote development of newer techniques and methods, and would probably utilize outstanding professors. Some judgments were registered because of general interest in the experimental aspect of the program. Other respondents stated that inter-institutional television would tend to result in combination of resources and to better utilization of existing staff.

Comments here also indicated a concern about the adaptability of the course and lack of teaching experience of the respondents. Other comments indicated preference to be contingent upon further experimentation.

The following table shows in detail the type of comments that were made by the respondents.

Table 51

SUMMARY OF FACULTY COMENTS REGARDING ORIGINATION OF TV COURSES AT THEIR INSTITUTIONS

Favor:	*OCE*[1]	*OSC*	*UO*	*WU*
TV courses require more preparation; efforts to find new techniques and outstanding professors.	4	23	30	1
Inter-institutional TV courses tend to combine resources, stretch available manpower.	0	19	22	1
On an experimental basis.	3	6	17	2
Inter-institutional TV provides a basis for inter-campus cooperation; obtaining new and different viewpoints.	1	12	4	0
Oppose:				
Concern over possibility of loss of the personal student-teacher relationship.	1	14	23	3
Courses are not adaptable to TV instruction; or the demand is very limited in the case of specialized courses.	0	16	33	1
Loss of freedom of expression to the professor.	0	3	0	1
Don't know:				
Courses are not adaptable to TV, limited demand and facilities elsewhere, concern over loss of personal contact with students, reserve judgment pending experimentation.	10	9	36	1

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

Referring to Table 50, from 34% to 43% of the respondents at the respective institutions indicated post-experimental approval of having courses in their areas of specialization televised from their institution to students at other institutions. The proportion opposing ranged from 21% to 42%. Acceptance seemed slightly less than pre-experimental estimates. The decrease was most pronounced at Oregon College of Education. Differences among institutions were not statistically significant to the 5% level.

The proportion of individuals in both questionnaires who indicated that they were willing to make their courses available to other schools seems substantial. Willingness on the part of individuals does not mean that a course can be made available for television, since there are many departmental considerations that must be met, and there is the further problem of willingess to receive courses on the part of all participating institutions. Observation and interview data support the conclusion that there was considerable willingness to originate courses on television.

The following question was designed to obtain an estimate of the willingness of faculty members to have their students receive television courses in their area of specialization from other institutions.

QUESTION: How would you feel about having courses in your area of specialization televised from the institutions listed below to the students of your institution?

Tables 52, 53, 54 and 55 present responses from faculty members at different institutions to this question.

Table 52

OPINIONS OF FACULTY MEMBERS AT OREGON COLLEGE OF EDUCATION REGARDING RECEPTION OF TELEVISED COURSES FROM INSTITUTIONS INDICATED BELOW

	OSC[1]		*UO*		*WU*	
	1957[2] *N=40*	*1959* *N=28*	*1957* *N=40*	*1959* *N=28*	*1957* *N=40*	*1959* *N=28*
Strongly favor	10%†	3%	20%	4%	10%	4%
Favor	40%	39%	45%	50%	20%	21%
Don't know	20%	18%	10%	7%	30%	29%
Oppose	5%	11%	5%	14%	10%	21%
Strongly oppose	5%	11%	0%	7%	5%	7%
No answer	10%	18%	10%	18%	15%	18%
Limited demand: course inappropriate	10%	0%	10%	0%	10%	0%

[1] OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

[2] 1957, Initial Questionnaire; 1959, Post-experimental Questionnaire.

† Chi square not computed since categories are not independent.

Initial response from faculty members at Oregon College of Education reported in Table 52 shows that approval for receiving courses from other institutions ranging from 30% to 65%, depending upon the institution suggested for origination; "don't know" ranged from 10% to30%, and "oppose" from 5% to 15%.

Ten percent indicated their course to be inappropriate for television or that there was a limited demand for it. Approximately 10% did not respond to the checklist or the free response.

Post-experimental approval for receiving courses from other institutions ranged from 25% to 54%; "don't know" from 7% to 29%; "oppose" from 21% to 28%. Eighteen percent did not respond to this item. There seemed to be substantial differences in approval according to the institution that was suggested for origination. Proportion of approval seemed slightly less in post-experimental estimates.

Table 53

OPINIONS OF FACULTY MEMBERS AT OREGON STATE COLLEGE REGARDING RECEPTION OF TELEVISED SOURSES FROM INSTITUTIONS INDICATED BELOW

	OCE[1]		*UO*		*WU*	
	1957[2] *N=256*	*1959* *N=271*	*1957* *N=256*	*1959* *N=171*	*1957* *N=256*	*1959* *N=171*
Strongly favor	1%†	2%	7%	9%	3%	3%
Favor	9%	6%	20%	18%	9%	8%
Don't know	17%	25%	16%	23%	17%	27%
Oppose	22%	20%	15%	14%	20%	19%
Strongly oppose	15%	19%	11%	10%	15%	17%
No answer	12%	28%	9%	26%	12%	26%
Limited demand: course inappropriate	24%	0%	22%	0%	24%	0%

[1] OCE, Oregon College of Education; UO, University of Oregon; WU, Willamette University.

[2] 1957, Initial Questionnaire; 1959, Post-experimental Questionnaire.

† Chi square not computed since categories are not independent.

Initial response from faculty members at Oregon State College reported in Table 53, shows that approval for receiving courses from other institutions ranged from 10% to 27%, "don't know" approximately 17%, and opposition from 26% to 37%, depending upon the institution from which the course was to be received.

From 22% to 24% of the responses were in the categories "course inappropriate" and "limited demand", and from 9% to 12% did not respond.

Post-experimental approval for receiving courses from other institutions ranged from 8% to 27%; 'don't know" between 23% and 27%; and opposition ranged from 24% to 39%. "No answer" ranged from 26% to 28%.

Some differences in approval were associated with the institution that was suggested for origination. Percentages favoring reception of courses from other institutions were relatively small.

Table 54

OPINIONS OF FACULTY MEMBERS AT THE UNIVERSITY OF OREGON REGARDING RECEPTION OF TELEVISED COURSES FROM INSTITUTIONS LISTED BELOW

	OCE[1]		*OSC*		*WU*	
	1957[2] *N=208*	*1959* *N=123*	*1957* *N=208*	*1959* *N=123*	*1957* *N=208*	*1959* *N=123*
Strongly favor	3%†	0%	4%	1%	4%	1%
Favor	9%	4%	17%	15%	9%	5%
Don't know	19%	17%	24%	24%	25%	26%
Oppose	28%	25%	27%	22%	24%	25%
Strongly oppose	24%	37%	14%	20%	21%	26%
No answer	9%	17%	6%	18%	9%	17%
Limited demand: course inappropriate	8%	0%	8%	0%	8%	0%

[1] OCE, Oregon College of Education; OSC, Oregon State College; WU, Willamette University.

[2] Chi square not computed since categories are not independent.

Initial response from faculty members at the University of Oregon reported in Table 54 shows that approval for receiving courses from other institutions ranged from 12% to 21%, depending upon the institution from which the courses were to originate. "Don't know" ranged from 19% to 25%, and opposition was from 41% to 52%.

"Course inappropriate" and "limited demand" included 8% of the responses; "no answer" included from 6% to 9%.

Post-experimental approval for receiving courses from other institutions ranged from 4% to 16%; "don't know" from 17% to 26%; disapproval from 42% to 62%. "No answer" was approximately 17%.

There were slight differences in percentage of approval according to the institution suggested for origination. Percentages favoring reception of courses from other institutions were relatively small.

Table 55

OPINIONS OF FACULTY MEMBERS AT WILLAMETTE UNIVERSITY REGARDING RECEPTION OF TELEVISED COURSES FROM INSTITUTIONS INDICATED BELOW

	OCE[1]		*OSC*		*UO*	
	1957[2] *N=50*	*1959* *N=26*	*1957* *N=50*	*1959* *N=26*	*1957* *N=50*	*1959* *N=26*
Strongly favor	4%†	0%	4%	0%	6%	8%
Favor	14%	4%	26%	23%	36%	23%
Don't know	30%	15%	32%	15%	24%	27%
Oppose	24%	35%	16%	35%	16%	19%
Strongly oppose	12%	23%	4%	4%	4%	8%
No answer	10%	23%	12%	23%	10%	15%
Limited demand: course inappropriate	6%	0%	6%	0%	4%	0%

[1] OCE, Oregon College of Education; OSC ,Oregon State College; UO, University of Oregon.

[2] 1957, Initial Questionnaire; 1959, Post-experimental Questionnaire.

† Chi square not computed since categories are not independent.

Initial response of faculty members at Willamette University reported in Table 55 shows that approval for receiving courses from other institutions ranged from 18% to 42% depending upon the institutions from which the course was to be received. "Don't know" responses were from 24% to 32%; opposition ranged from 20% to 36%.

Post-experimental approval for receiving courses from other institutions ranged from 4% to 31%. Don't know" responses from 15% to 27%; disapproval from 27% to 58%. "No answer" ranged from 5% to 23%.

Substantial differences in approval were associated with the institutions suggested for origination.

In summary, the data in the preceding four tables regarding faculty reaction to the reception of televised courses from other institutions tend to indicate the following factors, post-experimentally:

There were differences in percentage of willingness to receive courses among institutions, and according to the institution that was suggested for origination.

At each of the participating institutions, generally, a larger percentage of respondents approved reception of courses from large schools than from the smaller schools.

At the two larger institutions, percentage of disapproval (with one exception) was generally larger than percentage of approval for reception of courses.

At the two larger institutions, the proportion of respondents indicating willingness to receive courses from smaller schools was limited (4% and 11% respectively).

At the two larger institutions, percentage of approval for reception of courses from each other was 16% and 27% respectively.

Generally, percentage of approval for reception of courses was higher at Oregon College of Education than at the other institutions.

At Oregon College of Education percentage of approval for reception from larger institutions was larger than percentage of disapproval.

At Willamette University there was generally a larger percentage of disapproval than approval for reception.

At all institutions there was a substantial percentage of respondents in the "don't know" and "no answer" categories. Responses to "no answer" categories were appreciably larger in the post-experimental questionnaire than in the initial questionnaire. There were no respondents in the "course inappropriate" or "limited demand" category. The latter was probably a function of the lack of space qualification in the post-experimental questionnaire. The "no answer" category is difficult to interpret. There is reason to believe that such a response was made on a wide variety of bases including, a reserve-judgment attitude, belief that one's course is not adaptable to the medium, belief that there is a limited demand or offering of the course elsewhere, and, not perceiving a need for televised instruction.

Difference in percentage of responses in the "approval" caetgory between the 1957 and 1959 questionnaires were slight; the differences in percentage that did exist generally represented slight decreases in approval.

Generally, percentage of approval for reception of courses (Table 52 through 55) were less than percentages of approval for origination of courses (Table 50). In the latter there were few respondents in the "no answer" category.

These data seem to point out a basic problem in the development of an inter-institutional teaching program, i.e., a relatively small percentage of faculty only seemed willing to have their students receive courses by television from other institutions. These data were generally supported by interviews and observational evidence obtained during the course of the research project.

QUESTION: How do you suppose that television instruction compares to conventional classroom instruction in the factors listed below? (Refers to Table 56.)

This question was designed to ascertain faculty opinion regarding the effect of televised instruction on the following variables; holding student attention, standards of student achievement; adequacy of the student-teacher relationship; quality of teaching standards and stimulating student learning. It seems reasonable to assume that faculty attitudes regarding the effect that televised instruction would have on these variables is potentially an important determinant of faculty attitudes toward televised instruction.

According to Table 56 there seemed to be no predominant opinion regarding the effect of television on student attention in either the 1957 or 1959 questionnaires. An exception occurred at Willamette University where about half of the respondents thought that student attention in televised courses was worse than in conventional courses. At the end of the experimental period 28% to 39% of the respondents at the three state institutions thought student attention was better on television while 20% to 31% thought student attention was worse in televised courses.

It should be noted at this point that a carefully, controlled observational study mentioned elsewhere in this report showed a very high degree of attentive behavior to both televised and conventional instruction. Furthermore, a con-

Table 56

FACULTY OPINION REGARDING THE COMPARATIVE EFFECTIVENESS OF TELEVISED INSTRUCTION AND CONVENTIONAL INSTRUCTION

	OCE[1]		OSC		UO		WU	
	1957[2]	1959	1957	1959	1957	1959	1957	1959
N=	49	28	256	171	208	123	50	26
Holding attention; TV is:								
Much Better	3%†	3%	3%	4%	3%	2%	0%	0%
Better	25%	36%	29%	29%	23%	26%	12%	27%
Same	30%	36%	28%	41%	26%	34%	34%	23%
Worse	30%	21%	27%	15%	31%	28%	38%	50%
Much Worse	0%	0%	4%	5%	4%	3%	4%	0%
No Answer	12%	4%	9%	6%	13%	7%	12%	0%
Standards of student achievement; TV is:								
Much Better	0%	0%	0%	1%	0%	0%	0%	0%
Better	15%	7%	15%	6%	12%	6%	12%	15%
Same	68%	86%	53%	62%	55%	59%	40%	23%
Worse	5%	0%	18%	19%	15%	21%	36%	54%
Much Worse	0%	0%	2%	2%	1%	1%	8%	8%
No Answer	12%	7%	12%	10%	17%	13%	4%	0%
Adequacy of student-teacher relationship; TV is:								
Much Better	0%	0%	1%	0%	0%	0%	0%	0%
Better	0%	0%	2%	2%	3%	1%	0%	0%
Same	23%	14%	11%	10%	8%	7%	4%	4%
Worse	50%	68%	56%	52%	50%	56%	60%	42%
Much Worse	15%	14%	20%	29%	28%	29%	30%	54%
No Answer	12%	4%	10%	7%	11%	7%	6%	0%
Quality of teaching standards; TV is:								
Much Better	13%	11%	10%	13%	9%	11%	12%	8%
Better	42%	50%	52%	43%	44%	38%	28%	50%
Same	33%	32%	23%	29%	23%	30%	20%	19%
Worse	0%	3%	6%	4%	12%	8%	20%	19%
Much Worse	0%	0%	0%	3%	0%	2%	6%	4%
No Answer	12%	4%	9%	8%	12%	11%	14%	0%
Stimulating student learning: TV is:[3]								
Much Better		0%		1%		1%		0%
Better		21%		12%		12%		15%
Same		50%		48%		50%		42%
Worse		22%		27%		24%		39%
Much Worse		0%		3%		3%		4%
No Answer		7%		9%		10%		0%

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.
[2] 1957, Initial Questionnaires; 1959, Post-experimental Questionnaires.
[3] This item did not appear on the 1957, Initial Questionnaire.
† Since interpretation of data is only in terms gross patterns of percentages, Chi square is not computed.

siderable amount of informal reporting and observation showed a consistently high degree of student attention in most television courses.

In both the 1957 and 1959 questionnaires, a majority of respondents, with the exception of Willamette University, felt that standards of student achievement were about the same in televised courses as in conventional courses.

In both the 1957 and 1959 questionnaire there was a consistent registering of feeling by faculty that the student-teacher relationships were less adequate in televised teaching than in conventional teaching. This was a point of great concern for faculty members in assessing televised instruction.

A majority of faculty in both questionnaires registered the opinion that the quality of teaching standards were better on television than in the conventional classroom. From 19% to 33% felt that the quality of teaching standards were the same as in conventional instruction. Only a small percentage of respondents, except at Willamette University, felt that teaching standards on television were inferior to conventional teaching.

A majority of the respondents felt that television was as good as or better than conventional teaching in stimulating student learning. From 22% to 43% felt that television was inferior to conventional instruction in stimulating students.

Question: What do you think about using inter-institutional television instruction for the types of classes listed below? (Refers to Table 57.)

This question was designed to determine faculty opinion regarding the types of courses for which inter-institutional television might be appropriate. Table 57 shows that at the end of the experimental period a substantial percentage of faculty members (39% to 61%) registered approval of the use of inter-institutional television for lower-division, mult-section courses; a substantial proportion (58% to 64%) approved the use of inter-institutional television for introductory survey courses, and (47% to 66%) for extension courses.

Table 57

FACULTY OPINIONS REGARDING USE OF INTER-INSTITUTIONAL TELEVISION TEACHING FOR VARIOUS TYPES OF COURSES

	OCE[1]		OSC		UO		WU	
	1957[2]	1959	1957	1959	1957	1959	1957	1959
N=	40	28	256	171	208	123	50	26
Lower-division multi-section courses:								
Strongly favor	10%†	0%	17%	11%	10%	13%	12%	0%
Favor	52%	39%	53%	48%	47%	48%	38%	50%
Undecided	28%	32%	20%	26%	27%	26%	16%	31%
Oppose	0%	22%	4%	9%	6%	7%	18%	11%
Srongly oppose	5%	0%	2%	3%	4%	4%	14%	8%
No answer	5%	7%	4%	3%	6%	2%	2%	0%
Introductory survey courses:								
Strongly favor	8%	3%	8%	13%	12%	15%	12%	0%
Favor	55%	61%	52%	46%	49%	48%	38%	58%
Undecided	30%	14%	18%	24%	23%	23%	22%	15%
Oppose	0%	14%	12%	12%	8%	7%	18%	15%
Strongly Oppose	2%	4%	8%	1%	3%	2%	8%	8%
No Answer	5%	4%	2%	4%	5%	5%	2%	4%
Upper-division courses:								
Strongly favor	0%	0%	1%	1%	1%	2%	0%	0%
Favor	25%	14%	14%	11%	18%	11%	12%	19%
Undecided	48%	54%	43%	36%	38%	25%	26%	12%
Oppose	20%	18%	29%	37%	25%	42%	38%	46%
Strongly Oppose	2%	7%	9%	12%	12%	15%	22%	23%
No Answer	5%	7%	4%	3%	6%	5%	2%	0%
Graduate Seminars:								
Strongly favor	2%	0%	2%	2%	2%	3%	0%	0%
Favor	8%	4%	13%	7%	9%	4%	6%	23%
Undecided	25%	8%	17%	16%	12%	12%	8%	8%
Oppose	35%	39%	34%	37%	34%	20%	32%	27%
Strongly Oppose	28%	32%	30%	33%	38%	54%	54%	42%
No Answer	2%	7%	4%	5%	5%	7%	0%	0%
Extension Courses:								
Strongly favor	13%	4%	21%	19%	13%	16%	18%	15%
Favor	32%	43%	49%	47%	46%	46%	48%	46%
Undecided	45%	21%	21%	22%	28%	27%	18%	31%
Oppose	8%	25%	2%	4%	4%	3%	10%	8%
Strongly Oppose	0%	0%	3%	4%	3%	4%	2%	0%
No Answer	2%	7%	4%	4%	6%	4%	4%	0%

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

[2] 1957, Initial Questionnaire; 1959, Post-experimental Questionnaire.

† Since interpretation of data is only in terms of gross patterns of percentages, Chi square is not computed.

With one exception, institutional respondents opposed (49% to 74%) use of inter-institutional television for upper-division courses and graduate seminars. From 4% to 23% only approved television for more advanced courses.

Although there were differences in percentages between the Initial (1957) Questionnaire and the Post-experimental (1959) Questionnaire, the patterns of approval and disapproval for the various types of courses listed seemed basicaly to be similar in both questionnaires.

A basic problem involved in the acceptance of televised instruction by faculty members is their perception of the effect that televised instruction will have on the quality of education.

Table 58 shows that intially (1957) from 18% to 35% indicated that the quality of education might improve on television; from 22% to 62% indicated their feeling that quality of instruction would be about the same in the conventional clasroom; from 0% to 44% felt that the quality of education from televised instruction would decrease.

Question: In those courses in which inter-institutional TV is used as a means of instruction, the quality of education as you conceive it has:

Table 58

FACULTY OPINIONS REGARDING THE EFFECT TV HAS ON QUALITY OF EDUCATION

	OCE[1]		OSC		UO		WU	
	1957[2] N=40	1959 N=28	1957 N=256	1959 N=171	1957 N=208	1959 N=123	1957 N=50	1959 N=26
Greatly improved	0%	0%	4%	1%	1%	0%	0%	0%
Improved	18%	7%	31%	12%	24%	8%	18%	4%
Been about same	62%	57%	40%	39%	42%	32%	22%	18%
Deteriorated	0%	7%	16%	9%	17%	8%	[illegible]%	33%
Greatly Deteriorated	0%	0%	2%	1%	1%	0%	8%	4%
Don't know	5%	22%	3%	34%	5%	47%	4%	41%
No answer	15%	7%	4%	4%	10%	5%	12%	0%

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

[2] 1957, Initial Questionnaire; 1959, Post-experimental Questionnaire.

† Because theoretical frequencies were so small even when categories were combined, an overall Chi square was not computed.

Post-experimentally, 4% to 13% felt that it had improved; 18% to 57% reported feeling that the quality of instruction in televised teaching had been about the same as in conventional teaching; from 7% to 37% felt the quality of education had decreased. From 22% to 47% of the respondents at the respective institutions indicated that they did not know how the quality of education had been affected by televised instruction. It is interesting to note that the percentage of responses in the "improve" category were lowered appreciably in this questionnaire over the one of two years previously. There also was a noticeable increase in the "don't know" category, however,, this may have been a function of a slight change in the check list. Apparently a substantial number of the faculty felt that they had no good basis for making an evaluation on this item.

QUESTION: Have you talked to any students about the Inter-institutional TV Project, or heard them discuss it?

Table 59

PERCENTAGE OF FACULTY MEMBERS INVOLVED IN DISCUSSIONS ABOUT THE TELEVISION TEACHING PROJECT WITH STUDENTS

	OCE[1]		*OSC*		*UO*		*WU*	
	1957[2]	*1959*	*1957*	*1959*	*1957*	*1959*	*1957*	*1959*
	N=40	*N=28*	*N=256*	*N=171*	*N=208*	*N=123*	*N=50*	*N=26*
Yes	58%	68%	31%	43%	28%	45%	42%	54%
No	42%	32%	67%	55%	69%	54%	58%	46%
No answer	0%	0%	2%	2%	3%	1%	0%	0%

Chi square: 1957 Questionnaire=14.546*
Chi square: 1959 Questionnaire= 6.081

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.
[2] 1957, Inital Questionnaire; 1959, Post-experimental Questionnaire.
* Significant beyond the 5% level. No answer excluded in computations.

QUESTION: If yes, how do you think the majority of them feel about it? (Refers to question in Table 59 above.)

Table 60

FACULTY ESTIMATES OF STUDENTS' ATTITUDES TOWARD THE INTER-INSTITUTIONAL TV TEACHING PROJECT

	OCE[1]		*OSC*		*UO*		*WU*	
	1957[2]	*1959*	*1957*	*1959*	*1957*	*1959*	*1957*	*1959*
	N=23	*N=19*	*N=79*	*N=74*	*N=58*	*N=55*	*N=21*	*N=14*
Strongly favor	4%	0%	4%	0%	5%	3%	0%	0%
Favor	57%	0%	33%	26%	41%	33%	14%	7%
Undecided	26%	48%	50%	49%	39%	44%	53%	29%
Oppose	13%	47%	13%	21%	8%	20%	33%	64%
Strongly oppose	0%	5%	0%	4%	7%	0%	0%	0%

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.
[2] 1957, Inital Questionnaire; 1959, Post-experimental Questionnare.
† Because theoretical frequencies were so small even when categories were combined, an overall Chi square was not computed.

Table 59 indicates that initially (1957 Questionnaire), from 28% to 58% of the respondents reported having discussed the program with students or having heard students discuss the program. Table 60 shows that from 14% to 61% of this group reported that students seemed to approve the program; from 13% to 33% reported that students seemed to oppose the project.

Post-experimentally, the number of faculty reporting that they had been involved in discussions of the program with students ranged from 43% to 68%. Table 60 shows from 0% to 36% of this group reported student approval for the program; from 20% to 64% reported student disapproval.

At the end of the experimental period there was an increase of from 10% to 17% of the respective faculties who reported having heard students discuss the television teaching project. It is interesting to note the difference in faculty estimates regarding student approval on the two questionnaires. Noteworthy is the substantial decrease in student approval (according to faculty estimate) at Oregon College of Education. There is some evidence to indicate that this decrease may be related to the fact that all of the English Composition sections at this institution were offered on television, and that this course was generally less acceptable than other of the television courses.

A substantial proportion of faculty at Willamette University estimated that student attitudes have become more opposed. Generally, decreases in acceptance were reported at the other institutions also. It should be noted that the sample sizes at Willamette University and at Oregon College of Education are quite small.

QUESTION: Have you talked to any faculty members about the Inter-institutional TV Project, or heard them discuss it?

Table 61

PERCENTAGES OF FACULTY MEMBERS INVOLVED IN DISCUSSIONS ABOUT TELEVISION TEACHING PROJECTS WITH THEIR COLLEAGUES

	OCE[1]		*OSC*		*UO*		*WU*	
	1957[2]	*1959*	*1957*	*1959*	*1957*	*1959*	*1957*	*1959*
	N=40	*N=28*	*N=256*	*N=171*	*N=208*	*N=123*	*N=50*	*N=26*
Yes	88%	96%	68%	78%	68%	80%	64%	85%
No	12%	4%	30%	22%	31%	18%	36%	11%
No answer	0%	0%	2%	0%	1%	2%	0%	4%

Chi square†: 1957 Questionnaire=6.891
Chi square: 1959 Questionnaire=6.385

[1] OCE. Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.
[2] 1959, Initial Questionnaire; 1959, Post-experimental Questionnaire.
† No answer excluded in computation of Chi square.

QUESTION: If yes, how do you think the majority of them feel about it? (Refers to question in Table 61 above.)

Table 62

FACULTY ESTIMATES OF THE ATTITUDES OF THEIR COLLEAGUES TOWARD THE INTER-INSTITUTIONAL TEACHING PROJECT

	OCE[1]		*OSC*		*UO*		*WU*	
	1957[2]	*1959*	*1957*	*1959*	*1957*	*1959*	*1957*	*1959*
	N=35	*N=27*	*N=174*	*N=133*	*N=141*	*N=98*	*N=32*	*N=22*
Strongly favor	0%	0%	3%	1%	0%	1%	0%	0%
Favor	46%	11%	38%	20%	23%	7%	13%	8%
Undecided	51%	48%	42%	42%	60%	64%	34%	35%
Oppose	3%	41%	15%	33%	16%	25%	47%	48%
Strongly oppose	0%	0%	2%	4%	1%	3%	6%	9%

Chi square†: 1957 Questionnaire=46.861*

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.
[2] 1957, Initial Questionnaire; 1959, Post-experimental Questionnaire.
† Chi square for 1957 questionnaire was computed by combining responses into three categories: favorable, undecided, unfavorable. An overall Chi square for 1959 questionnaire not computed because theoretical frequencies were so small.
* Significant beyond the 5% level.

Table 61 shows that initially (1957 Questionnaire), a large proportion of faculty members had discussed the television project with other staff members. Table 62 shows from 13% to 46% of the respondents who had discussed the television project with other personnel reported that other faculty members seemed to approve the project; from 34% to 60% reported that other faculty members were undecided about their attitudes; from 3% to 53% reported that faculty members were generally opposed.

Post-experimentally, from 78% to 96% of the respondents reported that they had discussed the television project with other staff members or had heard them discuss it. Of this group, from 8% to 21% reported that other faculty members approved the television project; from 35% to 64% reported that other faculty members were undecided about their attitudes; from 28% to 57% reported that other faculty members were opposed to the television teaching program.

Generally, the responses to the 1959 questionnaire showed a smaller percentage of faculty members who attributed favorable attitudes of their colleagues toward televised teaching than was the case at the beginning of the experimental period in 1957. Certainly, a large proportion of faculty had discussed the television teaching project with their colleagues.

Question: How do you think that inter-institutional TV will affect (has affected) communication and cooperation among the participating institutions?

Table 63

FACULTY OPINIONS REGARDING EFFECT OF INTER-INSTITUTIONAL TV PROJECT ON COOPERATION AMONG SEPARATE INSTITUTIONS

	OCE[1]		*OSC*		*UO*		*WU*	
	1957[2]	*1959*	*1957*	*1959*	*1957*	*1959*	*1957*	*1959*
	N=40	*N=28*	*N=256*	*N=171*	*N=208*	*N=123*	*N=50*	*N=26*
A very desirable effect	15%†	14%	16%	5%	9%	4%	14%	8%
Desirable effect	70%	57%	63%	50%	62%	43%	62%	46%
Did not affect	5%	11%	11%	24%	10%	20%	18%	24%
Adverse effect	2%	7%	2%	6%	3%	12%	0%	4%
A very adverse effect	3%	0%	1%	1%	0%	1%	0%	0%
No answer	5%	11%	7%	14%	16%	20%	6%	18%

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

[2] 1957, Initial Questionnaire; 1959, Post-experimental Questionnaire.

† Because theoretical frequencies were so small even when categories were combined, an overall Chi square was not computed.

Data presented in Table 63 show that initially (1957 Questionnaire) the respondents preponderantly (71% to 85%) felt that communication and cooperation among the participating institutions would be increased. Generally, the respondents felt that this increase would be an artifact of course organization and planning among institutions. A few of the respondents commented that there might be an increase of inter-institutional rivalry and jealousy as a result of the extension of the program.

Post-experimentally, substantial proportions of faculty ranging from 47% to 71% still reported that the television project had had a desirable effect upon communication and cooperation among institutions. These responses do represent a decrease of from 14% to 24% from pre-experimental estimates recorded on the 1957 questionnaire. Only a small percentage of the respondents, however, registered the opinion that the project had had an adverse effect upon relationships among institutions. The change in proportion of response in the two questionnaires seems accounted for by the increased feeling that the project did not affect communication and cooperation among institutions, except in the specific departments in which courses were televised, and, by those who did not answer, many of whom indicated that they were still reserving judgment.

An indication of the type of comments received from faculty members on this question appear in Table 87 in Appendix F.

Question: In the current experiment anyone who has a TV set within the telecasting range of the station can watch the courses being televised. How do you feel about the fact that the general public can watch courses that are going to be televised to students?

Table 64

FACULTY OPINIONS REGARDING THE ACCEPTABILITY OF OPEN CIRCUIT FOR TELECASTING OF COLLEGE AND UNIVERSITY COURSES

	OCE[1]		*OSC*		*UO*		*WU*	
	1957[2]	*1959*	*1957*	*1959*	*1957*	*1959*	*1957*	*1959*
	N=40	*N=28*	*N=256*	*N=171*	*N=208*	*N=123*	*N=50*	*N=26*
Strongly approve	28%†	14%	31%	31%	36%	33%	40%	27%
Approve	53%	64%	48%	51%	45%	45%	46%	54%
Undecided	15%	18%	13%	10%	10%	13%	8%	7%
Disapprove	2%	0%	5%	4%	6%	5%	4%	4%
Strongly disapprove	0%	4%	1%	2%	1%	2%	2%	4%
No answer	2%	0%	2%	2%	2%	2%	0%	4%

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

[2] 1957, Initial Questionanire; 1959, Post-experimental Questionnaire.

† Because theoretical frequencies were so small even when categories were combined, an overall Chi square was not computed.

This question was designed to obtain information from faculty about their feelings toward open-circuit television broadcast as compared to closed-circuit television. Some concern had been evidence about the fact that the televised courses were open to public viewing.

Table 64 shows an "overwhelmingly" high proportion of the faculty in both initial and post-experimental questionnaires registered approval for open-circuit television. A very small proportion registered disapproval.

For further information regarding faculty opinion on this question see Table 88 in Appendix F.

Question: Assume that a course in your area of specialization is going to be taught by instructional TV. Which type of arrangement do you think most appropriate?

Table 65

FACULTY OPINIONS REGARDING THE APPROPRIATENESS OF INTER- AND INTRA-INSTITUTIONAL TELEVISION FOR TEACHING COLLEGE COURSES

	OCE[1]		*OSC*		*UO*		*WU*	
	1957[2] *N=40*	*1959* *N=28*	*1957* *N=256*	*1959* *N=171*	*1957* *N=208*	*1959* *N=123*	*1957* *N=50*	*1959* *N=26*
Inter-institutional television instruction	55%	35%	33%	39%	43%	29%	54%	58%
Intra-institutional television instruction	8%	28%	26%	33%	25%	29%	26%	27%
Don't know	35%	32%	31%	24%	31%	37%	12%	11%
No answer	2%	5%	10%	4%	1%	5%	8%	4%

Chi square:† 1957 Questionnaire=18.430*
Chi square: 1959 Questionnaire=12.259

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, Universtiy of Oregon; WU, Willamette University.
[2] 1959, Initial Questionnaire; 1959, Post-experimental Questionnaire.
† No answer excluded in computation of Chi square.
* Significant beyond the 5% level.

Table 65 indicates that, post-experimentally, a substantially larger percentage of faculty at Willamette University indicated a preference for inter-institutional television teaching over intra-institutional television; at the other institutions the differences were varied on the post-experimental questionnaire. A substantial percentage at the three state institutions indicated a "don't know" attitude regarding their preferences for either of the two means of utilization of television. Patterns of percentages seemed similar in both questionaires at two institutions; however, at Oregon College of Education and the University of Oregon there seemed to be a decrease in percentage of preference for inter-institutional television. It should be noted that these percentages do not indicate acceptance of televised instruction. They are merely an indication of preference for the manner in which televised courses might be utilized. For further comments explaining faculty opinions on this question see Table 89 in Appendix F.

Question: Assuming increased enrollments and staff shortages in institutions of higher education, what would be your preference for handling the increase?

Table 66 records data from a multiple response item in which the respondents could (and many did) check more than one of the alternatives, consequently the percentages total more than 100%. Some caution should be observed in interpretation of these responses since they were practically forced choices. Attention was very specifically directed toward television as the most likely alternative.

In the Initial Questionnaire, the largest proportion of respondents generally preferred an increase in the use of inter-institutional televised teaching; secondly, an increase in the use of single institutional television; and thirdly, an increase in the size of regular classes. A substantial proportion indicated various other means of handling the problem.

Post-experimentally, proportions suggesting the extension of inter-institutional television ranged from 21% to 35% which in some instances is considerably lower than in the Initial Questionnaire.

Table 66

FACULTY OPINIONS REGARDING PREFERRED MANNER OF HANDLING INCREASED ENROLLMENTS IN INSTITUTIONS OF HIGHER EDUCATION

	OCE[1]		*OSC*		*UO*		*WU*	
	1957[2] *N=40*	*1959* *N=28*	*1957* *N=256*	*1959* *N=171*	*1957* *N=208*	*1959* *N=123*	*1957* *N=50*	*1959* *N=26*
Increase size of conventional classes	15%†	21%	35%	23%	28%	36%	22%	31%
Extend use of Inter-institutional television	52%	21%	52%	31%	42%	34%	38%	35%
Extend use of Single-institutional television	25%	36%	38%	29%	31%	28%	24%	19%
Other	8%	22%	22%	19%	33%	14%	24%	23%

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.
[2] 1957, Initial Questionnaire; 1959, Post-experimental Questionnaire.
† This was a multiple response item in which percentages may add up to more than 100%. Chi square not applicable.

It might be noted that the percentage of response of faculty members at Oregon College of Education shifted appreciably from preference for inter-institutional television instruction to intra-institutional television or use of "other" means of instruction. This shift of opinion is noticeable in both Table 66 and Table 65.

For further information on faculty responses to this question, see Appendix G.

Items presented in Table 67 through 76 appeared on the Initial (1957) Questionnaire only.

Question: Do you think that teaching on inter-institutional TV will tend to raise or lower the professor's prestige with students? (Assume satisfactory quality of instruction.)

Table 67

FACULTY OPINIONS REGARDING THE PRESTIGE EFFECTS OF TELEVISION TEACHING ON STUDENTS

	OCE[1] *N=40*	*OSC* *N=256*	*UO* *N=208*	*WU* *N=50*
Greatly increase	12%	9%	6%	4%
Increase	40%	52%	45%	42%
No difference	28%	29%	32%	28%
Decrease	7%	3%	2%	10%
Greatly decrease	0%	0%	1%	0%
Don't know	8%	2%	11%	6%
No answer	5%	5%	3%	10%

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.
† Because theoretical frequencies were small even when categories were combined, an overall Chi square was not computed.

A potential danger attributed to televised instruction is the fact that the television instructor may derive a disproportionate amount of prestige from the fact that he is teaching on television. Associated with this is the concern expressed by some faculty members that the television instructor will necessarily "play to the audience" or use entertainment techniques to insure attention rather than emphasizing the scholarly aspects of the courses. If such a disproportionate prestige differential were to develop this could be a possible source of friction between television and non-television staff.

In responding to the question (Table 67), faculty members tended to think that prestige for a television professor would be increased. The percentage of "increase" responses range from 46% to 61%, with approximately 30% indicating that there would be no change.

The majority of comments that were made expressed the opinion that the prestige factor and success of the course will depend upon the individual professor just as it does in the classroom.

Question: Do you think that teaching on inter-institutional TV will tend to raise or lower the professor's prestige with other professors? (Assume satisfactory quality of instruction.)

Table 68

FACULTY OPINIONS REGARDING THE PRESTIGE EFFECTS OF TELEVISION TEACHING ON STAFF MEMBERS

	OCE[1] *N=40*	*OSC* *N=256*	*UO* *N=208*	*WU* *N=50*
Greatly increase	8%†	3%	1%	2%
Increase	37%	42%	34%	40%
No difference	35%	44%	42%	40%
Decrease	5%	3%	9%	6%
Greatly decrease	0%	0%	1%	0%
Don't know	10%	4%	11%	2%
No answer	5%	4%	2%	10%

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, Universtiy of Oregon; WU, Willamette University.

† Because theoretical frequencies were small even when categories were combined, an overall Chi square was not computed.

Table 68 shows from 35% to 45% feel that the television professor's prestige with other professors will increase; from 35% to 44% feel that it will make no difference; a small proportion indicate decrease or "don't know".

Question: What courses (or types of courses) do you think could be adapted best to *inter-institutional* TV instruction? (Indicate by course title, department or other description).

Table 69 reports that the basic categories in which respondents felt that television had most utility were lecture-survey type courses; courses employing a large amount of visual demonstrations; and television used as enrichment within existing course structures.

The data tend to indicate that respondents have identified the television medium as one which is best adapted to the lecture demonstration course and that it has less utility in a course which typically has involved much interaction and discussion among students and professor.

There were approximately one hundred more comments in which possible adaptations of television were suggested.

Table 69

COURSES AND TYPES OF COURSES THAT FACULTY THINK ADAPTABLE TO TELEVISION INSTRUCTION

	OCE[1] *N=40*	*OSC* *N=256*	*UO* *N=208*	*WU* *N=50*
Lectures; courses of a strictly lecture nature; courses with large enrollments	7[2]	51	58	17
Courses which use visual demonstrations; combination of lecture and demonstration; beginning science course lectures supplemented with quiz section and laboratory	5	37	15	7
Extension	2	7	5	0
Enrichment of existing course	10	32	37	9

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

[2] Figures here represent frequency, not percentage of faculty response.

Question: In your opinion will the professor have less freedom of expression teaching on TV than he has in the conventional classroom?

Table 70

FACULTY OPINIONS REGARDING THE EFFECT THAT TV TEACHING HAS ON FREEDOM OF EXPRESSION

	OCE[1] *N=40*	*OSC* *N=256*	*UO* *N=208*	*WU* *N=50*
Yes	62%	61%	63%	64%
Don't know	23%	14%	19%	12%
No	10%	21%	17%	22%
No answer	5%	4%	1%	2%
			Chi square†=6.448	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

† No answer excluded in computation of Chi square.

The responses to this question, shown in Table 70, indicated that a large proportion of staff members (over 60%) felt that the television professor would have his traditional freedom of expression restricted when teaching over television. Analysis of a previous item, however, in which respondents were asked to render opinions regarding the open-circuit aspect of the telecourse, indicated that a large proportion felt that it is justifiable to televise courses so that the general public can receive them. Apparently some loss of freedom of expression is not of great concern to most respondents.

Observation and interviews with television professors indicated that there was not really much restriction in their expression because of the open-circuit nature of the televised courses.

Question: Do you think that special consideration (as indicated below) should be given for teaching a regular course on inter-institutional TV?

Table 71

FACULTY OPINIONS REGARDING APPROPRIATE COMPENSATION FOR TV TEACHING

	OCE[1] *N=40*	*OSC* *N=256*	*UO* *N=208*	*WU* *N=50*
Yes	77%	72%	77%	70%
Don't know	10	14	12	16
No	8	8	10	12
No answer	5	6	1	2
			Chi square†=1.439	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

† No answer excluded in computation of Chi square.

QUESTION: If yes, what kind of consideration? (Refers to question in Table 71 above.)

Table 72

FACULTY OPINIONS REGARDING APPROPRIATE COMPENSATION FOR TV TEACHING

	OCE† *N=40*	*OSC* *N=256*	*UO* *N=208*	*WU* *N=50*
Release time	71%	64%	73%	32%
Extra Compensation	0%	6%	6%	14%
Both	29%	25%	18%	34%
No opinion	0%	5%	3%	0%
Either	0%	0%	0%	20%

† Because theoretical frequency was small Chi square was not computed.

Table 71 shows a large proportion of the respondents felt that television professors should have released time to compensate for the extra time involved in preparation for a televised course. From 18% to 34% felt that the television professor should receive both released time and extra compensation for televised teaching. Differences among institutions were not statistically significant in data reported in Table 71.

QUESTION: Are there special situations in the courses which you teach for which TV may have value?

Table 73

PERCENTAGE OF FACULTY WHO INDICATED SPECIAL SITUATIONS IN THEIR COURSES FOR WHICH TELEVISION MIGHT HAVE SOME VALUE

	OCE[1] *N=40*	*OSC* *N=256*	*UO* *N=208*	*WU* *N=50*
Yes	45%	36%	38%	52%
Don't Know	38%	34%	32%	24%
No	12%	26%	25%	20%
No Answer	5%	4%	5%	4%
			Chi square†=7.887	

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, Universtiy of Oregon; WU, Willamette University.

† No answer excluded in computation of Chi square.

The percentages of responses (from 36% to 52%) shown in Table 73 indicate that faculty members felt that television might have some value for their courses. Overall differences were not statistically significant to the 5% level.

Approximately 170 descriptive comments were made indicating specific situations in which television might have some use in courses that were taught by the respondents.

Generally, the comments implied a type of enrichment such as improving observations, demonstrations and the improved use of visual aids. A few specific suggestions are listed merely to give an indication of the variety of possible situations in which enrichment possibilities were suggested. They include, giving part of a course by television, public performance, staging, speaking, acting, readings and dialogue, teaching skills in instrumental music, demonstration of teaching techniques, typing, demonstrations in dance, language skills, geography, sharing of visiting experts, and many others.

QUESTION[1]: Do you feel that actually observing a TV lecture affected your attitude toward instructional TV?

Table 74

FACULTY OPINIONS REGARDING THE EFFECT ON ATTITUDES FROM VIEWING TELEVISION LECTURES

	OCE[2] *N=29*	*OSC* N=*120*	*UO* *N=50*	*WU* *N=15*
Yes	79%	63%	64%	27%
No	14%	30%	34%	60%
No answer	7%	7%	2%	13%
			Chi square†=11.885*	

[1] This was the second part of a two-part question on the 1957 questionnaire. Respondents to this item indicated that they had observed one or more television lectures.

[2] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

† No answer excluded in computation of Chi square.

* Significant beyond the 5% level.

Table 74 indicates that a substantial proportion of the respondents at the state institutions reported that actually observing television lectures affected their attitudes toward television as an instructional medium. A significantly smaller proportion at Willamette University reported such an attitude. Such reports should have implications in terms of deliberate procedures designed to modify attitudes.

QUESTION: Please indicate what you think to be the chief advantages of inter-institutional TV used for instruction.

The responses have been classified as indicated below. Specific faculty comments are also included with each category.

Table 75

FACULTY OPINION ON ADVANTAGES OF INTER-INSITUTIONAL TELEVISION INSTRUCTION

	OCE[1]	*OSC*	*UO*	*WU*
Efficiency	18[2]	66	88	22
More efficient use of facilities (visual and demonstration)				
Economy—staff and facilities (help alleviate teacher shortage)				
Answer to increased enrollments—greater number of students can be reached by an instructor				
Space efficiency				
Improve instruction				
More careful preparation—improved instruction	29	141	137	9

Table 75 (*Continued*)

	OCE[1]	*OSC*	*UO*	*WU*
High quality of lectures could be used				
The advantage of "front row seating"				
Comparison of different classroom procedures				
Broader coverage of material				
Ideal way to spread teaching techniques to other teachers				
Presenting material in orderly fashion				
Supplement and enrichment to existing program				
This might be useful in extending factual information				
More intimate tone of lecturing				
Promote student interest				
Develop new techniques in teaching				
Transference of more responsibility to student				
Take over lower division load				
Improve general level of instruction				
Raise standard of instruction in introductory courses				
Inter-Institutional	14	24	58	18
Permitting a positive approach to inter-institutional might help end "cold war"				
Reduce relative isolation at campuses				
High quality of instruction available to all institutions				
Exchange of ideas among institutions				
New points of view among institutions				
Inter-change of best facilities and faculty among institutions				
Better cooperation and communication between institutions				
Widens course opportunity for students, both inter-institutional and single institution				
May promote more "standardization of course content				
Broadens viewpoints of institutions participating				
Spreads benefits of staff members and equipment among institutions				
Cross-fertilization in developing ideas in a field by a less cumbersome means of communication than the scholarly journal				
Specialty courses of one institution where staff strongest can be presented for other school's benefit.				
Avoid duplication in course organization				
Telecasting of expensive experiments in Physical Science				
Miscellaneous	2	20	16	4
Good public relations and publicity				
Good opportunity for use as general adult education				
May well be the wave of the future				
Bring education to those unable to attend college				
Promote academic interest among general public				
Unlimited audience				

QUESTION: Please indicate what you think to be the chief disadvantages of inter-institutional TV.

Table 76

FACULTY OPINION ON DISADVANTAGES OF INTER-INSTITUTIONAL TELEVISION INSTRUCTION

	OCE[1]	*OSC*	*UO*	*WU*
Student-teacher relationship	14[2]	75	108	28
Decreased and inadequate student-teacher relationship				
Loss of personal element in teaching				
Dehumanize instructor				
Student loses identity				
Limitations as instructional technique	25	86	62	23
No spontaneous student questions				
Instructor feedback and stimulation are lacking				
Most courses not suited to TV				
Can't adapt technique to individual differences				
Lack of student participation				
Can't teach laboratory on TV				
Can't relate lecture to laboratory or discussion				
Inferior role of staff member as section leader				
Reduces flexibility of method				
Loss of the social aspect of learning				
Instructor talks to camera				
Lack of help in production				
Can't control library and other assignments				
Many classes not adapted to lecture method				
Quality of education	17	63	73	11
Emphasis on acting—not teaching				
Lower quality				
Pouring in—absorbing passive learning				
Formalize lecture (mass education)—automation				
Great pressure for uniformity—conformity—standardization, resulting in lower standards				
Can't develop students' ability to think critically				
Lack of student attention				
One point of view to all students at all schools				
Students accept uncritically "lecture authority"				
Limits instructors' freedom of expression				
No better than text book				
Tape would be as good				
Inter-institutional aspects	5	69	16	0
Heterogeneous student backgrounds among schools				
Dissension between major professor and others				
Dissension between schools				
Student attitude toward other school				
Undue prestige for originating institution				
Organization and administrative	13	73	44	0
Cheap method of instruction—no dignity—time waster				
Cost of production				
Dissension between departments				
Impossible to discover talent				
Dissension within departments				
Professional rivalry—non-TV compared to TV faculty				
Administrative problems				
Cure-all attitude by administration				
Lack of time necessary to prepare				

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[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

[2] Frequency of response.

Table 76 (*Continued*)

	OCE[1]	OSC	UO	WU
Waste of time in organizing among institutions				
Miscellaneous	6	35	10	0
Job threat				
Danger that TV may become permanent fixture				
Resistance of faculty to present challenge which TV offers				
Potential danger for propaganda				
Mechanical big brother				
Scheduling				
Need training to educate over TV to use the medium				
Could lead to training too few teachers				
No information about research				
Loss of faculty who do good job				
Divert attention from important problems in education				
Adverse criticism by faculty				
Program launched with insufficient prior study				

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

[2] Frequency of response.

QUESTION: The Oregon Project is the first major experiment with TV on an inter-institutional basis. What factors associated with the use of inter-institutional TV that might have a bearing on its acceptability to you would you like to have investigated?

The above question was intended to obtain from faculty members their suggestions for desirable research problems that might be incorporated into the Oregon Project. Since this was an open-ended item, the responses were extremely varied and classification into discrete categories was found to be relatively impossible. Generally, however, faculty suggestions lent themselves to the following classifications:

Techniques of evaluation.
Specific effects of television on students.
Effect of television on the quality of education.
Faculty reaction to the use of television for instruction.
Effect of television on the teacher-pupil relationship.
Research and experimentation with television as an instructional medium.
Factors of administration, cost and efficiency.
Inter-institutional factors.
Television professors as an area of research.

In addition to the classifications listed above, some of the specific comments made by faculty members are also listed in Appendix H. The rationale for their inclusion is that they represent a large number of potential research problems suggested by faculty members who are seriously interested in exploring the potential and limitations of televised teaching. They provide an excellent list of suggestions for subsequent researchers interested in the area of televised teaching. The suggestions can also be used as a basis for inferring faculty attitudes toward televised instruction; i.e., analysis of the comments can give some indication of determinants of attitude.

Summary of General Faculty Attitudes Toward Inter-Institutional Television Instruction

The following is a summarization of the opinions of faculty members as they were registered on the 1959 (post-experimental) questionnaire. Where particularly relevant, comparisons between the 1957 and 1959 questionnaire responses will be indicated. Otherwise, examination of the tables presented in the preceding section will enable the reader to develop an understanding of the differences and changes in faculty opinion that developed over the experimental period. It is important to point out that the opinions and judgments of general faculty members should be interpreted with the understanding that most of them have had no experience with televised instruction other than the observation of a limited number of televised lectures.

A large proportion of respondents at the participating state institutions (58% to 75%) indicated that television was a sufficiently good approach to teaching to warrant its use in education. A limited percentage (0% to 17%) of the respondents indicated that television should have extensive future use in education. At Willamette University a smaller percentage registered favorable opinions regarding the future use of televised teaching. From 14% to 21% of the faculties at the state institutions registered the opinion that television should be used only in limited situations, or should not be used at all for instruction.

From 73% to 82% of the respondents felt that the Oregon State System of Higher Education should continue experimentation with television teaching.

At the state institutions, approximately 25% of the respondents indicated that they would like to experiment personally with teaching on television. At Oregon College of Education and Willamette University, the proportion of post-experimental interest in personally teaching on television was less than pre-experimental interest. These data seem to indicate that a sufficient number of faculty members would be willing to teach on television to insure an inter-institutional television program in terms of staff needs.

A substantial proportion of individuals at each of the participating institutions reported that they were willing to make their courses available to students at other schools via the medium of inter-institutional television. Percentage of acceptance at the respective institutions ranged from 34% to 43%. This assumed that the respondents did not necessarily have to teach the courses themselves.

Generally, a small percentage indicated willingness to have students on their campus accept courses in their teaching areas from other institutions by inter-institutional television. The degree of acceptance varied according to institution of the respondent and the institution suggested for origination. Oregon College of Education generally had the highest proportion of acceptance for origination elsewhere. There seemed to be more evidence of willingness, at both small and large schools, to receive from large institutions than from small institutions. At the two larger institutions

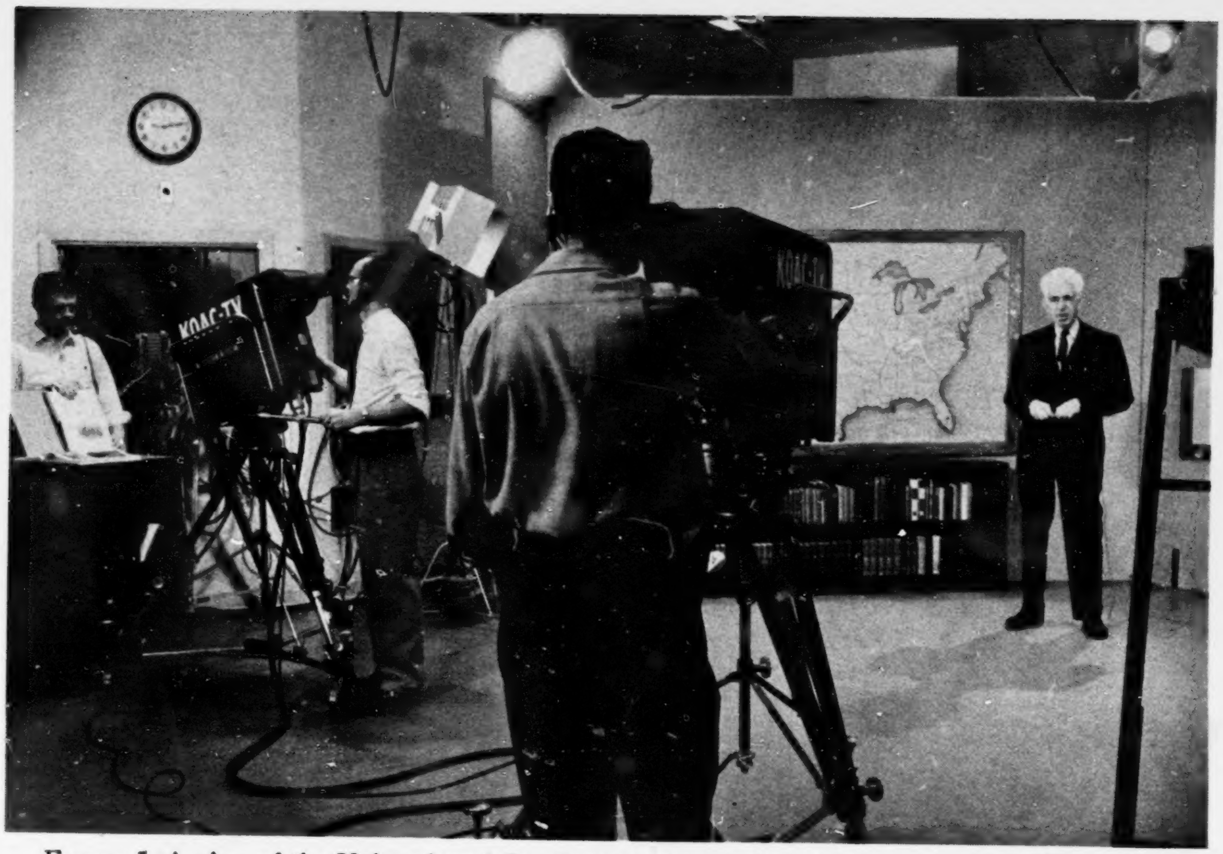

Figure 5. A view of the University of Oregon television studios during a lecture on History of the United States by Professor Wendell Stephenson.

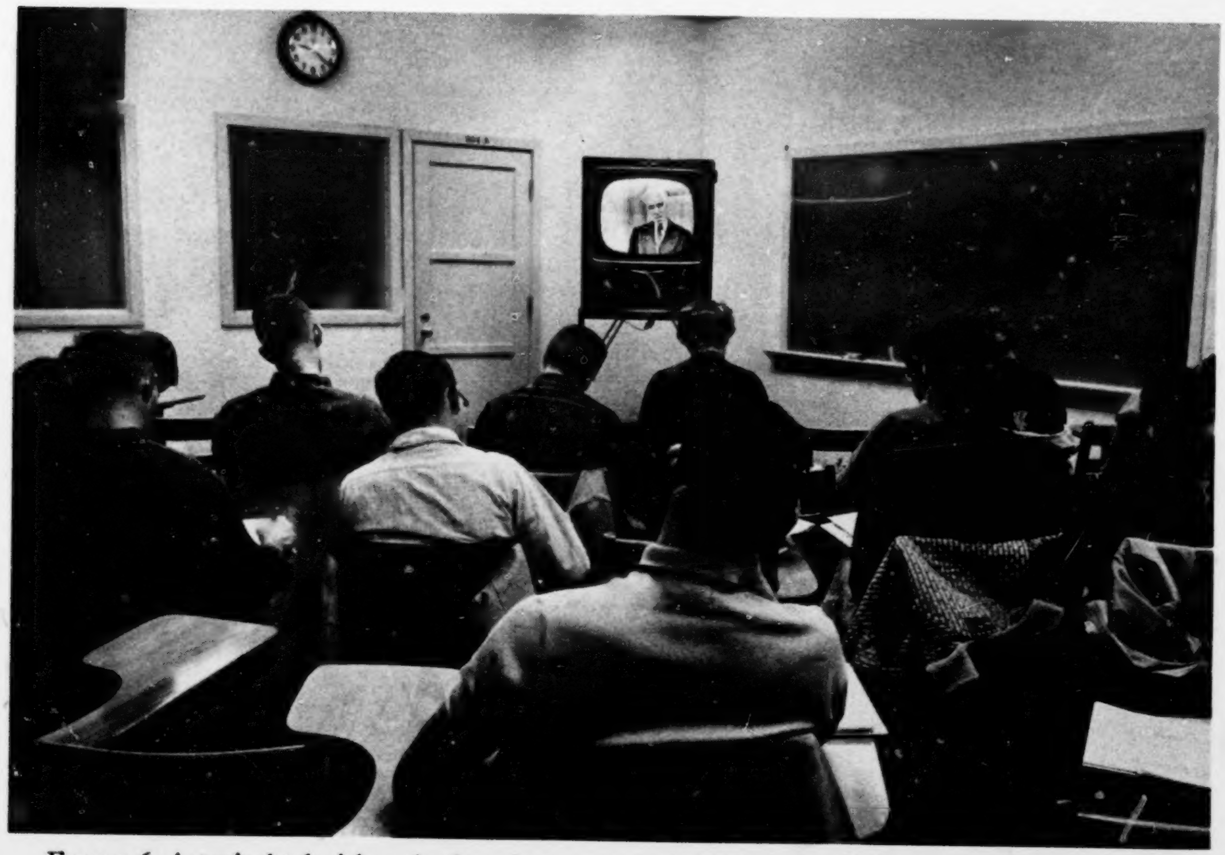

Figure 6. A typical television viewing classroom on the University of Oregon campus. Note the television receiving set is mounted on a movable stand and has a 24" picture screen and a front-mounted speaker.

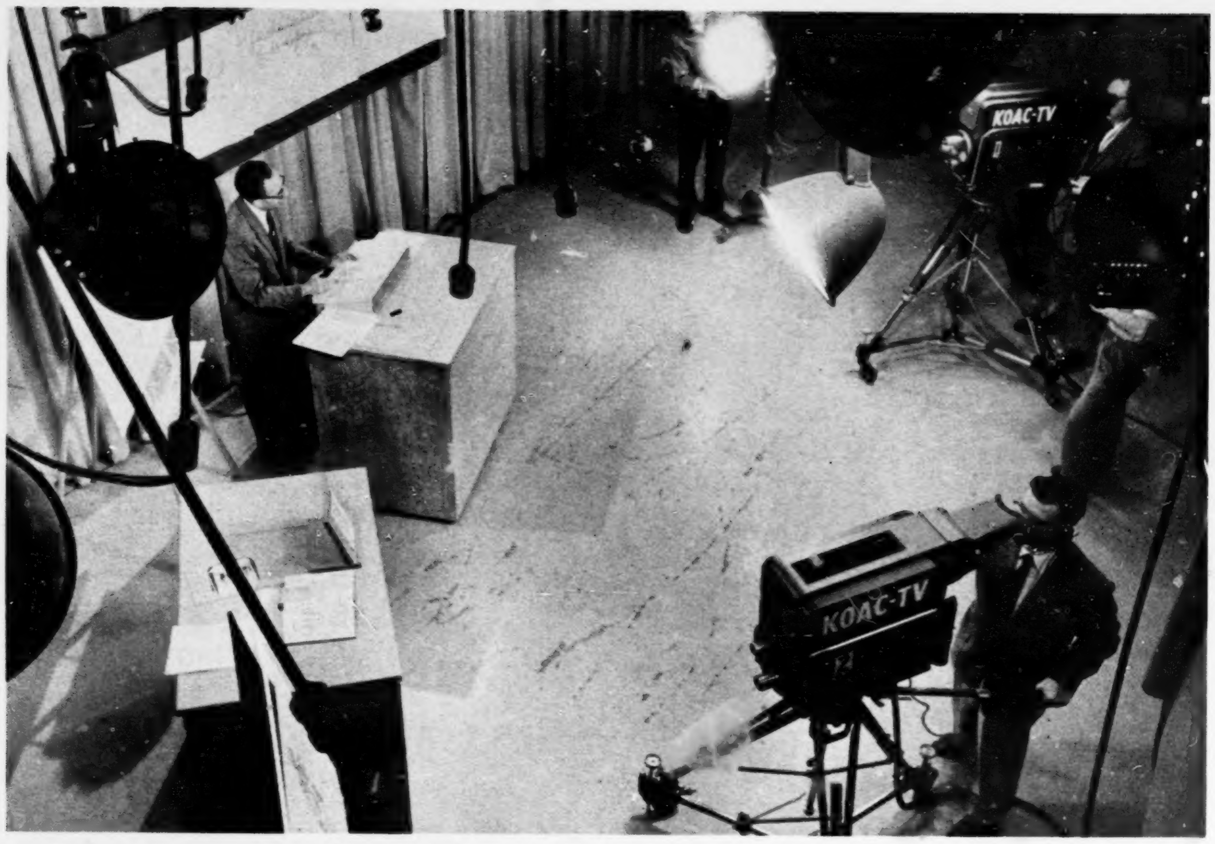

FIGURE 7. A view of the Oregon State College television studios during a lecture on Human Development by Professor David Brody of Oregon College of Education.

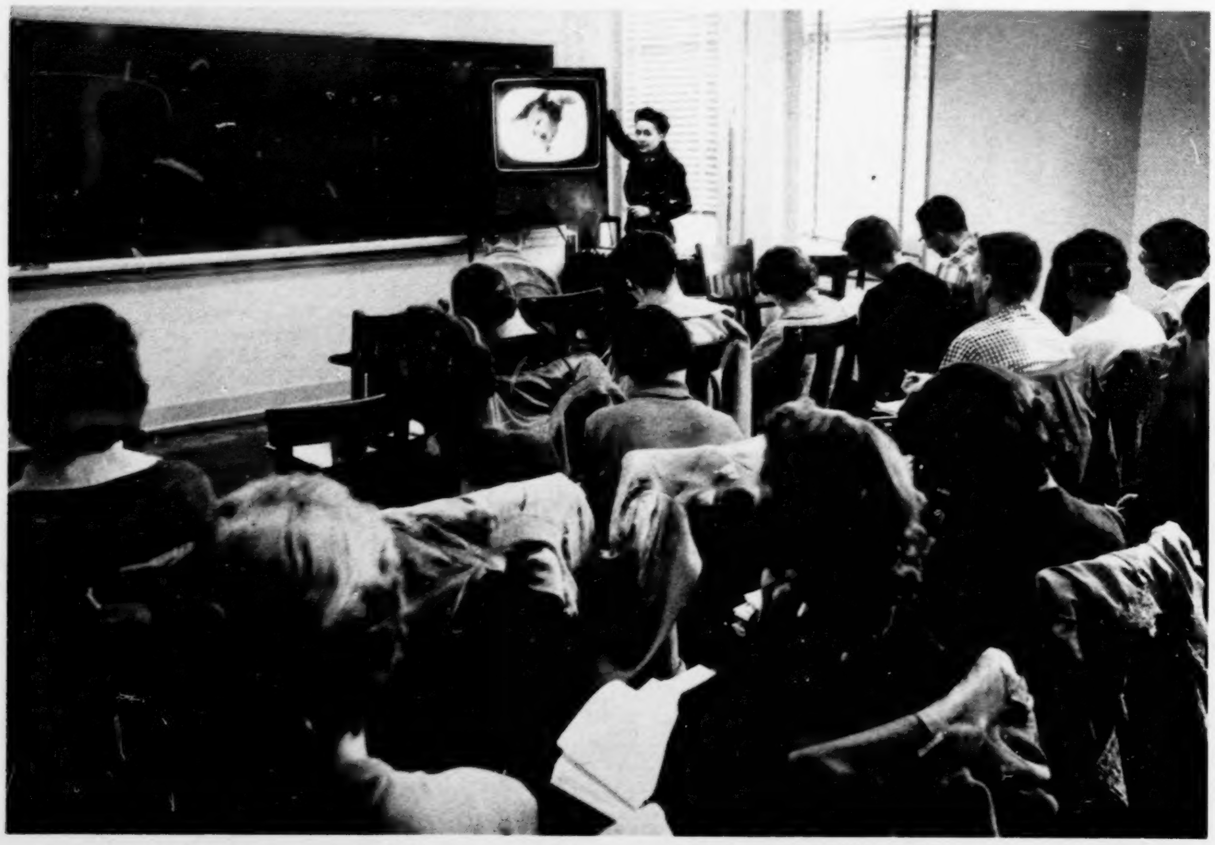

FIGURE 8. Discussion-instructor Van Loan adjusts a television receiving set as a class of students at Oregon State College watch a course in Human Development.

the percentage of willingness to receive courses from other campuses was 16% and 27%. Generally, complete analysis of responses indicated more resistance toward reception of courses from elsewhere than for origination of courses from the respondent's institution.

Although percentages of responses varied according to institutions, generally larger percentages of faculty members approved the use of television for lower-division, multi-section courses, introductory survey courses, and extension courses than for upper-division courses and for graduate seminars. Proportion of approval for the former ranged up to 67%.

Faculty opinions regarding the effect that television would have on student attention were extremely varied. A majority of respondents (with the exception of Willamette University) felt that standards of student achievement were the same in televised courses as in conventional courses. A majority of the responding faculties felt that the student-teacher relationships were inadequate in televised courses. A majority of faculty members indicated that the quality of teaching standards were better on television than in the conventional classroom. The faculties seemed fairly well divided in regard to the effect that television might have on stimulating student learning.

Faculty members were either undecided regarding the effect that television had on the quality of education or they indicated that they did not know. Many faculty members seemed to show a "reserve judgment" attitude with respect to this factor.

Substantial proportions of faculty, ranging from 47% to 71%, reported that the television project had had a desirable effect upon communication and cooperation among institutions. Only a small percentage reported that the project had hand an adverse effect upon inter-institutional relationships.

The majority of faculty members (78% to 96%) had discussed, or had been involved in discussions with other faculty members about the inter-institutional television teaching project. They reported that the majority of their colleagues seemed undecided about the television teaching project with a slightly larger proportion opposed to than accepting of such activity.

A substantial number of faculty members had discussed the television project with students or had overheard students discussing the project. Students were reported for the most part as being undecided with a fair number expressing favorable and a similar number unfavorable reactions. A larger proportion of the faculties at Willamette University and Oregon College of Education reported that students were opposed to inter-institutional televised instruction.

An "overwhelmingly" high proportion of the faculty in both initial and post-experimental questionnaires registered approval for open-circut television. A very small proportion registered disapproval to open-circuit broadcasting of courses. Assuming that television instruction was to be used in a given academic area, about 35% of the respondents at the state institutions indicated preferences for using inter-institutional television. At Willamette University, 58% of the faculty indicated preference for inter-institutional televised instruction. Close to 30% of the faculties at all institutions indicated preference for intra-institutional television.

Since there were some items on the 1957 questionnaire which were not repeated on the 1959 questionnaire, a summarization of these items is included below.

Generally, a large proportion of faculty members felt that the television teachers' prestige with other faculty would increase. A substantial proportion also felt that there would be no prestige differential.

Generally, faculty members felt that television had most usefulness for lecture-survey type courses, courses employing a large amount of visual demonstrations, and, as enrichment within conventionally taught courses.

A large proportion of faculty reported their feeling that the freedom of expression of the professor would be limited on television. It is interesting to note, however, that an extremely high proportion also indicated approval of open-circuit television. Apparently these faculty members were not concerned over any limitation in expression which might be imposed upon them through use of the televised medium.

Pre-experimentally, faculty members reported the following as potential advantages of television instruction:

The possibility of increased efficiency in use of facilities, staff and in meeting enrollments.

The potential television has for improving instruction, particularly in terms of more careful preparation of the television lecture and the improved quality of lectures.

The potential advantages such as public interest and better community relationships.

Pre-experimentally faculty members reported their feeling that the following would be disadvantages of television:

An inadequate student-teacher relationship and loss of the personal element in teaching.

General limitations of television with respect to established teaching techniques.

Long term detrimental effects on quality of education.

Inter-institutional factors, such as heterogeneity of students, which might not permit optimum results from teaching procedures.

Organizational and administrative factors ranging from cost of production to administrative attitudes regarding television.

Pre-experimentally, faculty members indicated that they would like to see research done regarding the overall instructional effects of television, administrative factors in television teaching, and the effect of inter-institutional televised instruction on relationships among staff members at the different institutions. It should be noted that the research program as planned and carried out seemed to parallel the research interests reported by many faculty members. More specific faculty comments are found in Appendix H.

CHAPTER IV

General Conclusions

Comments Regarding Long-Term Objectives of the Inter-Institutional Television Teaching Project

In Chapter II of this report, specific long-term objectives of the research project were outlined. These objectives were quite broad and it was anticipated that they would not be completely realized in the initial stage of the project which focused on the identification of certain problems that would affect inter-institutional instruction. Although the initial stage was considered exploratory in nature, it is possible to make some comments regarding the extent to which the long-term goals were achieved and to indicate some possibilities for their attainment in the future.

Television's Potential in Extending the Influence of an Outstanding Teacher to Several Campuses

One of the long-term objectives of the research project was to determine whether inter-institutional television could be used to bring outstanding professors to students who would not otherwise have had contact with them. During the first two years of the project the individuals selected to teach on television were outstanding professors in their own areas. Through the medium of inter-institutional television they taught students at other institutions who would not otherwise have had them as instructors. It is apparent in student opinions that diversity of points of view and wider selection of professors were desirable aspects of instruction. These comments should in no way be interpreted as meaning that competent staff members are not available on the student's home campus, nor should they be construed as a criticism of staff on any particular campus. It is assumed only that any arrangement, wherein the selection and availability of professors is increased, can be considered a potential improvement of instruction.

Television's Potential in Capitalizing Upon the Special Curricular Strengths of Certain Institutions

A second major long-term objective was to determine whether some unique courses or special programs of each institution could be made available to the students at other institutions. To include such an approach in an overall inter-institutional teaching program seems to have a sound underlying logic since it can probably be assumed that the various institutions have differential strengths and weaknesses in their curricula. Inter-institutional television instruction could capitalize upon the strengths of a given institution and supplement those areas in which other institutions did not have fully developed programs.

During the first part of the project this objective was not attained. The television offerings were primarily courses that were common to the four campuses. This was on the assumption previously noted; i.e., that the first phase of the project was related to problems of inter-institutional teaching by television and to some understanding of their instructional, organizational and administrative implications. During the second phase of the project, organization of the program will be directed in part toward the offering of some special or unique courses. During 1959-60, for instance, at least one course, Astronomy, will be offered by the only professor employed in the State System of Higher Education whose specialized area of study is astronomy. It will be offered at the other institutions which do not regularly offer astronomy or, if offered, the course has been taught by individuals who are not trained especially in astronomy, but rather in some related area of science.

Television's Potential for Effecting More Economical and Effective Use of Teaching Personnel

Another long-term objective of the inter-institutional television program has been to determine whether the use of televised instruction on an inter-institutional basis effects more economical and efficient utilization of teaching personnel and results in released time or reduced load for regular staff members without loss of quality in instruction.

The program, as it was organized with the support of The Fund for Advancement of Education, did result in release of the television professors from other responsibilities and so help them to improve the quality of their instruction. Such a conclusion was generally confirmed by the self-report of the television professors themselves.

As previously indicated, the television project for the first two years was set up, for the most part, on a combination of televised and conventional instruction. This organizational pattern required the active participation of practically the same number of personnel as is usually found in conventional instruction. Some savings in the initial two years, however, resulted from the fact that the participating discussion-instructors in practically all of the courses were freed from the task of actually preparing and giving lectures, since their primary responsibility was to supplement the televised lectures by answering questions and stimulating discussion among the students in their sections.

There was some actual saving of staff time in two of the experimental conditions. The second year of the televised

Chemistry course and the third term of the televised History course were both taught entirely by television and did not consume the time of an instructor on each campus in viewing the televised course or in conducting supplementary face-to-face discussion groups.

During the second part of the experimentation (1959 to 1962) the organizational pattern will be such that released time for staff members will be a specific part of the objectives of the program and the supplementary teaching will be minimized. In two instances, kinescope films of the televised course in Chemistry will be used on different campuses during the 1959-60 school years as a part of further experimentation in teaching effectiveness and in savings of staff time.

Although there was some reduction in duplication of courses through televised instruction, the experimental nature of the program did not dictate total enrollment in televised course offerings. To the extent that the televised courses enroll large numbers of students on each campus, there could be some reduction of independent offerings of courses at the separate institutions. As the program develops, it is planned that a larger number of students will be taught simultaneously; more than can be taught by conventional methods or by intra-institutional television, thus reducing the number of duplicate sections within and among institutions. Such an approach would also permit some comparative costs in consideration of economy along with quality in education. There is no reason to believe that such a study will produce results any different from those conducted elsewhere which show substantial savings in instructional costs when large groups of students are reached.

Another basic question which was considered relates to inter-institutional television instruction as a means of combatting future shortage of college and university faculty. The research has demonstrated thus far that an inter-institutional program of televised instruction is feasible and that a single teacher's effectiveness can simultaneously be brought to several campuses by television. There are still questions of student and staff acceptance and matters of relative effectiveness regarding televised teaching which must be answered if complete endorsement is to be given this method of instruction.

Evidence from the Oregon study tends to indicate that faculty acceptance of inter-institutional television teaching might be greatly facilitated if instruction and course origination alternated among the various participating institutions. Such alternation could be used upon the assumption that there are outstanding staff members in many subject areas which are commonly taught in all of the state institutions. This could enable the respective institutions to develop their abilities to use television as an instructional medium. It could imply that there is no corner on the "ability market" at any specific institution in the commonly taught instructional areas. Carrying out instruction on this basis might facilitate the general development and improvement of programs at all the institutions, ultimately reducing the duplication of courses and providing the basis for a standard subject matter core. It could facilitate a maximum amount of free exchange of ideas and information regarding specific courses which were worked out on an inter-institutional basis. On a long-term basis, it may be that alternating the origination of courses among the participating institutions in those subject areas commonly taught in all institutions will promise the best approach to a voluntary self-sustaining program.

Television's Potential for the Improvement of Quality in Instruction

This report has presented some findings on the manner in which televised teaching has affected the quality of instruction in courses taught entirely by television and in courses taught partially by television and partially by conventional means. The Oregon Project, however has not had as one of its major emphases, the use of television for "enrichment" of a conventionally taught course.

The use of television for enrichment may be one of the best ways to utilize it on an inter-institutional basis. Outstanding faculty members at the various institutions could be called upon to give a single, or a series of lectures or demonstrations in their particular field of interest and knowledge. Recognized authorities in any area could telecast presentations to classes at other institutions, but would have no organizational responsibility in terms of day-to-day teaching of a course, or responsibility for grades, test construction, etc. This type of enrichment might prove far more logical on an inter-institutional basis than on an intra-institutional basis. Faculty members at the participating institutions have indicated an interest in this use of television and it is hoped that further exploration in the use of television for course enrichment can be carried out during the next phase of Oregon's inter-institutional television teaching project.

Television's Potential for Increasing Cooperation and Communication Among Institutions

Another long term objective of the project was related to the potential effect that an inter-institutional television teaching program might have on communication (free exchange of ideas) and cooperation among the participating institutions. It is extremely difficult, of course, to assess the actual net effect that the program has had on inter-institutional relationships. The inability to measure such an effect is not due to any lack of information for there are many instances and events that bear directly upon this question. The difficulty, however, is to fit all of these events into a pattern which will permit any kind of a generalization at this time.

Numerous instances can be cited of cooperation and mutual efforts among the participating institutions which are solely the result of the inter-institutional teaching program. These include individual faculty members working together on program and course development; inter-institutional committees and the exchange of ideas and information that has resulted from their work; the actual fact that courses originating at one institution have been taken by students at other institutions; the fact that televised courses have been originated by professors from each participating state institution; the inestimable amount of small group activity involving the cooperation of all of the members at each of the participating institutions connected with the origination of a particular course; the cooperation of registrar's offices and other offices charged with the responsibility for administration at the institutions; coordination of all production and telecasting activities on the two originating campuses and the use of their studio and broadcasting facilities; the willingness of many faculty members to be involved in actual teaching of television courses; the willingness of many others to have experimentation take place with their courses at no small effort on their parts; the development of a coordinated research program and research council on an inter-institutional basis—a council which might serve as a model for research in areas other than television. All these and many other examples of cooperation can be cited.

Many instances of conflict in interests and resistance toward upsetting the *status quo* by introduction of televised instruction have also been evident at the participating institutions, particularly at the departmental level. The greatest difficulty seems to be an apprehensive and reticent attitude of faculty members toward the reception of courses from another institution. There is also some fear expressed over the public relations value of television in "advertising" a specific institution as a "specialist" in a certain area if that institution has exclusive television broadcast rights to a course. Most of the conflicts and concerns which hinder cooperation seem to arise out of factors related to status and prestige of both staff and institution in special academic areas.

In the final analysis, then, evaluation of the net benefit of inter-institutional teaching in terms of cooperation and communication among institutions revolves around the interpretation and analysis of all the specific incidents of cooperation and resistance. At the present writing it seems impossible to make a comprehensive evaluation. It should be added as a footnote, however, that a majority of faculty members responding to the post-experimental questionnaire did indicate that they felt that the project has had a desirable effect upon relationships among institutions.

Potential for Extending the Influence of Institutions of Higher Education into the Community

Since no formal, systematic attempt has been made to survey the general public's reaction to the open-circuit telecasting of regular college courses on an inter-institutional basis, the extent of the influence of the televised classes is not known. Informal comment, telephone calls and unsolicited letters from viewers would tend to indicate that a sizable number of people appreciate and take advantage of the educational opportunities offered by such telecasts. On the basis of limited feedback from viewers in the broadcast area, it would appear that the television courses have had some favorable influence in extending the educational services of the colleges and university into a wider community area.

A more complete evaluation of the effect of the inter-institutional television instructional program on the general public will have to await the accumulation of more reliable data. It is anticipated that this will be accomplished during the next stages of the project.

Summary of Findings for the First Two Years of Experimentation with Inter-Institutional Television Instruction

Feasibility of Inter-Institutional Television Instruction

Technical Feasibility

The operation of an inter-institutional teaching program by television is technically feasible. This finding is not surprising, of course, in view of the fact that television station and network equipment has been developed to operate so effectively.

The Oregon Inter-institutional Television Teaching Project did require the installation and continued operation of an open-circuit television broadcast transmitter, of two microwave relay units, of complete television broadcast equipment in the studios of two campuses, of receiving antennae and related distribution equipment, and, of individual television receiving sets in the numerous television viewing classrooms on the separate campuses of the four participating institutions. Technical failures and difficulties regarding the entire inter-institutional television set up were so rare during the first two years that its operation can be considered completely successful.

It should be noted that competent engineering and maintenance staffs must be employed to assure proper operation of television equipment and facilities, but there is nothing inherent in an inter-institutional television teaching program which will not permit it to be carried out succesfully from a technical point-of-view.

Administrative Feasibility

Administratively, an inter-institutional program of instruction by television is feasible. There are many problems involved in seeking acceptance of televised teaching, in selecting courses and professors, in adjusting schedules and in standardizing procedures among several institutions of higher education but such problems can be solved through conference with cooperative administrators and faculty members at the different institutions.

The introduction of an inter-institutional television instructional program is necessarily disruptive of certain academic assignments and established procedures at the various institutions. In an attempt to be less disruptive, however, the pattern established for teaching of courses by television during the first two years of experimentation was a compromise between televised and conventional instruction. This pattern did not prove successful as a basis for instruction. It seems from the experience gained in the Oregon Project that total teaching of courses on television will work out better than some combination of televised and conventional teaching when the course enrollment involves students on several different campuses.

Any program which requires acceptance and cooperation from personnel employed at different institutions of higher education demands an administrative structure which permits representatives from each institution to participate in decisions made which affect all institutions. In the Oregon Inter-institutional Television Teaching Project, an attempt was made to accomplish this by creating special television committees on each campus. These committees, of representative faculty members, acted as sounding boards for staff reactions to televised teaching, canvassed their home campuses for the best courses to offer by television, and served as an institutional contact for the project director. The chairman of the television committee on each campus also handled certain administrative matters on his campus which were necessary to the operation of the program. Although the organization for administration in the Oregon Project; namely, a project director, a research director and television committees on each campus, may not be the only way to set up an inter-institutional program, it seemed to work effectively in the development of Oregon's experiment in televised instruction.

If experience gained from the Oregon Project is typical, the biggest administrative problem in inter-institutional televised instruction is the negotiation necessary with representatives from each institution to determine which courses are acceptable and which professor from which institution will be responsible for teaching each televised course. There seem to be strong factors of status and prestige which are associated with the origination versus the reception of an inter-institutional televised course. These feelings involve not only the individual faculty member affected by such a program but also the staff members of entire departments, and the faculty and administrative staff of each institution. The faculties at each institution generally show more interest and willingness in originating a televised course from their own institution than in receiving a course from another institution. There is a certain amount of reluctance and resistance on the part of faculties toward reception of televised courses from professors teaching on campuses other than their own. These faculty reactions related to status and prestige, and loyalty to one's own institution, do complicate the administrative problems in an inter-institutional television teaching program.

Financial Feasibility

It is impossible to make any conclusive statement about the financial feasibility of inter-institutional television instruction at this stage of experimentation in Oregon. The project was not conceived to see if televised teaching could save money but more to see if televised teaching could improve the quality of the educational product. Because of the emphasis on quality of instruction, rather than the quantity of student reached, the program has been carried out on a limited scale so it would not unduly disrupt the established instructional programs at the several participating institutions. This approach precludes any consideration of comparative costs for televised versus conventional teaching.

The purchase and installation of equipment to permit televised teaching was expensive for the State System of Higher Education. These facilities, though, were considered to be a capital investment, as is the construction of a classroom building, and will not be charged entirely against cost-per-student instruction in television. Television broadcasting is being used to reap wider educational benefits than those related only to the teaching of formal courses by television.

The acquisition of a staff of trained personnel to handle television production is an item of considerable expense which cannot be overlooked in conducting a program of televised instruction. A generous grant from The Fund for Advancement of Education was helpful in underwriting some costs for production, teaching and research personnel for the Oregon Project. These costs will have to be carried in higher education budgets in the future and justification for such expense determined by the relative benefits of the educational television broadcasts. It is the present belief of those responsible for the development of educational television in Oregon that the cost is entirely justified in terms of the potential results for Oregon's educational future. With the present need for extending educational services, it seems that a state's educational system cannot afford *not* to afford an educational television facility.

Effectiveness of Inter-Institutional Televised Instruction

Comparison of Student Achievement in Televised and Conventionally Taught Courses

Studies conducted in General Chemistry, Human Development and Educational Psychology: Learning showed no significant difference in achievement between students who took the courses by television as compared to those who took them in conventional classrooms. These findings corroborate many other studies which have been done on comparative effectiveness. An analysis of students in the televised Chemistry course also showed that they compare favorably with national norms in achievement on a standardized Chemistry examination.

Comparison of Student Achievement in Televised Courses Between Classes at the Originating and at Receiving Institutions

There is some evidence which indicates that students enrolled in a televised course on the campus at which the course originates achieve at a slightly higher level under some conditions than students who receive the televised course on other campuses. Analyses thus far tend to indicate that this may be accounted for by certain uncontrolled variables in the experimental situation related to student familiarization with the new method, motivation, extra-class assistance and other institutional factors. Further study and comparison, of achievement between students in a televised course on the campus from which the course originates and the ones where the course is received, will be carried out in an attempt to obtain more conclusive results.

The data also indicated some differences in achievement among students at the separate institutions which received televised courses. These differences seem to be a function of heterogeneity and selective factors other than scholastic aptitude. They could also be related to such variables as motivation and extra assistance outside the classroom.

Student and Faculty Attitudes Toward Inter-Institutional Television Instruction

Student Attitudes

Although inter-institutional televised instruction introduced a completely new instructional situation, student attitudes toward television instruction seemed to be based on the same factors of like and dislike which determine their attitudes toward conventionally taught courses. Results in the Oregon Study confirm existing research which indicates that attitudes toward television are not generalized attitudes toward an instructional medium, but are rather specific responses to a course in which the medium of instruction is only one of a number of factors.

Data gathered by questionnaire prior to the student's exposure to televised teaching indicated that the pre-experimental attitude of the students toward inter-institutional television instruction was generally approving although the majority did not actually prefer television instruction to conventional instruction. Pre-experimentally, students were curious and interested in this new approach to teaching. They expressed some concern about the loss of personal interaction with the professor and with inability to ask questions in class. They did think that televised teaching would tend to employ the best teachers in subject areas and might improve the quality of instruction.

The limited pre-experimental opposition to televised teaching which was registered by students seemed to relate to the idea of television instruction itself and not to the inter-institutional aspect of the program.

Post-experimentally, students at the institution from which a televised course was originated were generally more accepting of the course than students at the receiving institutions. A majority of the students, however, evidenced continuing approval for the inter-institutional aspect of instruction in the program. Although students expressed higher levels of approval for inter-institutional television instruction, their preferences for origination of courses from their own institutions would tend to indicate substantial acceptance of intra-institutional television.

Considerable change from pre-experimental attitudes was evidenced which would tend to indicate that student attitudes toward televised instruction are subject to modification. Some groups that had been favorably disposed to televised instruction pre-experimentally indicated post-experimental disapproval, while other groups that had been less accepting pre-experimentally indicated a high level of post-experimemental acceptance. In one instance, a majority of the students in a televised course indicated a preference for that course over their taking a conventionally taught course in the same subject on their own campus. There is some evidence therefore, that students do not necessarily undergo "disenchantment" with a given televised course.

There were some organizational and operational factors in the conducting of the televised teaching program which affected student attitudes. Slightly negative attitudes developed if proper coordination was not maintained between the televised presentations and the conventional discussion sessions conducted on each campus. The nature and degree of communication of the professor over television, and through hand-out material, also seemed to affect attitudes. The presence of a staff member in the viewing rooms on each campus, and his reaction to his role as discussion-instructor, likewise seemed to be related to student attitudes toward television instruction. There was no apparent relationship between student acceptance of a course and the fact that it was offered entirely on television or as a combination of televised and conventional instruction.

The instructional factors which seem most related to student attitudes were the loss of personal relationship with the professor and the limited possibility for asking questions in class. In practically all courses, students considered the quality of visual aids, the organization of material, the preparation of the television professor, and the quality of lectures to be the equivalent of, or superior to those same factors in conventional instruction.

In most courses the student-teacher relationship was considered less adequate in televised instruction than in conventional instruction. Attempts to improve student-teacher relationships and to acquaint the students on the receiving campuses with the television professor through informal get-togethers seemed to have little effect on student attitudes. In one instance, planned in-class contact of the television professor on receiving campuses did seem to have some favorable effect on student attitudes toward the television professor.

Of the courses offered by television during the first two years of the Oregon Project, the elementary course in General Chemistry and the basic course in Appreciation of Literature were judged most acceptable by students. The course in History of the United States was also considered appropriate. The upper-division sequence in Education (School in American Life, Human Development, Educational Psychology: Learning) was less well-accepted as a televised course. English Composition was determined inappropriate by the majority of those who were associated with the course as either student or faculty. These findings are certainly not conclusive and could well differ if presented again with some of the many variables of the inter-institutional television teaching situation but slightly changed.

To summarize, there are many differences in the attitudes of students toward televised teaching ranging from strong approval to strong opposition. Generally, students indicated no opposition to the idea of inter-institutional television instruction. After exposure to inter-institutional television courses, some students indicated a preference for a televised course over a conventionally taught course. Except for some concern over the loss of personal interaction with the professor and not being able to ask questions in class, the students' attitudes toward televised teaching seemed to be based on the same factors of like and dislike which determine their attitudes toward regular classroom instruction.

The significant finding seems to be that students will accept, and can react favorably to televised courses which are taught by professors on campuses other than the one in which the students are in residence.

Faculty Attitudes

Attitudes of faculty members toward inter-institutional instruction by television ranged from highly approving to strongly disapproving. A greater percentage of faculty members were opposed to than accepting of the idea of television teaching.

The professors who actually did the televised teaching were favorably disposed toward use of television for instruction. They did feel that some courses, and some professors, adapted themselves to television better than others and that such factors should be considered in the choice of courses for a televised program. The television professors did not express concern over the fact that the telecourses were broadcast on open-circuit and could be tuned in by any interested viewer in the general public.

Professors who conducted discussion sections on the receiving campuses were varied in their opinions regarding the usefulness of inter-institutional television instruction for their particular course. Highest level of approval was for the televised courses offered in Chemistry and Literature; there was less approval for the courses offered in English Composition and Education. The teachers who were assigned to discussion sections were generally dissatisfied with their roles as discussion-instructors. They felt somewhat superfluous and frustrated in their assignment to monitor classes, to pass out papers, to answer occasional questions, and to lead discussion of the ideas developed by another teacher. There were definitely factors of status which concerned the discussion-instructors and affected their attitudes toward televised instruction. It seems reasonable to conclude, then, that any televised instructional set-up which uses regular staff members as discussion-section instructors will receive only limited acceptance. The use of graduate students as discussion-instructors was fairly successful, however, and warrants further experimentation.

There were enough faculty members (aproximately 25% of the respondents) who indicated an interest in teaching by television to insure variety of course offerings on a continuing basis. Faculty members generally indicated more willingness to originate a televised course than to receive a course from another professor from another institution. Although there were degrees of differences in willingness to accept televised courses from other schools, the percentage of acceptance was relatively small. Large proportions of the faculty members reported, however, that they thought that the television project had had a desirable effect upon communication and cooperation among staff members at the participating institutions.

Faculty members were generally undecided regarding the effect that they felt television instruction had on the "quality of education." For the most part they felt that levels of student achievement from televised instruction were equivalent to conventional instruction and that the standards of teaching were probably higher on television than in conventional instruction. Faculty members felt strongly that student-teacher relationships were inadequate in televised instruction.

Faculty members attitudes regarding the appropriateness of courses for televised teaching indicate that lower-division, elementary or beginning courses, which traditionally have large enrollment and many sections, are most acceptable for inter-institutional instruction. Faculty members registered more willingness to accept this type and level of course by television than more specialized upper-division courses.

A complete review of faculty reaction as recorded from questionaires and from informal observation and interview would indicate considerable resistance by individual faculty members to the use of television for instructional purposes. The percentage of faculty members who express interest in televised teaching, however, would seem to be large enough to assure continued operation of an inter-institutional program. Although a large proportion of the faculty who responded to the questionaires indicated general opposition to television, they also expressed a "reserve judgment" attitude until more information was available. An extremely large majority did recommend that the State System of Higher Education should continue experimentation with inter-institutional television instruction.

✓ In summary, then, as a result of two years of experimentation in teaching of courses by television on an inter-institutional basis, it can be said that technically, operationally and administratively such a program will work. Students will accept this method of teaching on much the same basis they accept conventional teaching, and televised instruction apparently does not legislate against them from an achievement point of view. Faculty members indicate some reluctance toward televised teaching but tend to agree that experimentation should be carried out in television to determine its potential as an educational tool. Current plans and commitments in Oregon will assure continued experimentation in inter-institutional television instruction for another three-year period to search out the answers to certain questions raised through the operation of the program to date, and, to determine further the potential which television holds for the Oregon State System of Higher Education.

Appendix A

Tables of Student Reaction to Televised Instruction

Table 77

FREQUENCY TABLE OF THE COMMENTS OF STUDENTS IN THE GENERAL CHEMISTRY (1958-59) TELEVISION COURSE

	UO	*OSC*	*OCE*
N[1]=	32	42	5
Like Most			
Professor is well prepared; good teacher	17	15	2
Closeups of experiments; can see and hear better	12	18	1
Do more work on my own; learn more	4	6	1
Professor sticks to subject; no wasted time; more material covered	7	4	0
Course set-up and organization is good	11	9	0
Different; takes less time	6	1	1
No laboratory and small classes	0	10	0
Dislike Most			
No laboratory; some experiments hard to visualize	5	2	1
No questions or discussion	12	11	1
No personal contact with professor	3	5	0
TV set works poorly	0	6	0
Material is covered too fast	5	7	0

[1] N represents the number of students from whom responses were obtained. Several respondents made more than one comment, consequently, the total number of comments may be greater than the number of respondents.

Table 78

REASONS CITED BY GENERAL CHEMISTRY STUDENTS (1958-59) FOR CONTINUING WITH TELEVISED COURSE

	OSC	*UO*
N[1]=	39	34
I like TV instruction; no different than conventional instruction	23	21
Prefer conventional instruction; none offered or all filled up	3	0
Want to stay with this sequence	11	8
No answer	2	5

Table 79

REASONS CITED BY APPRECIATION OF LITERATURE STUDENTS FOR NOT CONTINUING WITH TELEVISION COURSE

	OCE	*OSC*	*UO*
N[1]=	5	27	16
Don't need the course	2	11	6
Schedule problems	0	5	4
Will not be in school	0	3	4
TV doesn't hold interest	0	3	4
Want personal contact, spontaneous questions	2	8	2
TV covers too much	1	2	0
No answer	0	0	0

[1] N represents the number of students from whom responses were obtained. Several respondents made more than one comment, consequently, the total number of comments may be greater than the number of respondents.

Table 80

FREQUENCY TABLE OF COMMENTS OF STUDENTS IN THE APPRECIATION OF LITERATURE TELEVISION COURSE

	UO	*OSC*	*OCE*
N[1]=	118	72	33
Like Most			
Guest speakers and panels	12	14	8
Professor is good, well prepared	28	19	2
Interesting, concise lectures	22	2	7
Professor from other school	0	6	1
TV holds attention, pleasurable atmosphere	10	1	1
Cover more material, no interruptions, deviations	28	10	0
Requires attention, more stimulating, incentive	11	8	1
Easy to see, visual aids good	13	12	5
More viewpoints	6	9	4
More students benefit, all get the same information	5	1	0
Different, informal	6	4	0
Small classes	10	1	0
Dislike Most			
Technical failures	6	25	0
Lack of discussion, questions after TV lecture	30	17	11
Guest speakers poor, panels confusing	5	7	1
No personal contact	10	9	8
Cover material too quickly, talk too fast	9	9	2
Too much outside reading	2		1

[1] N represents the number of students from whom responses were obtained. Several respondents made more than one comment, consequently, the total number of comments may be greater than the number of respondents.

Comments presented in Table 77, 80 and 82 represent replies to forced response items; i.e., students were asked to indicate the thing that they liked most about televised instruction and the specific thing that they disliked most about televised instruction. An additional open-ended item solicited any general comments that they might have. Since they were forced to respond to the item, the proportion of items under like or dislike does not necessarily have a relationship to the proportion of students who indicated acceptance, or lack of acceptance, of a specific course.

Table 81

REASONS CITED BY APPRECIATION OF LITERATURE STUDENTS FOR CONTINUING WITH TELEVISED COURSE

	OCE	*OSC*	*UO*
N=	16	16	84
Professor and his method of teaching are good	3	4	18
Learn as much as in conventional class	2	0	8
Want to keep same professor for the sequence	1	1	10
Can hear and see better			5
Accomplish more as must work by self			3
Professor from UO makes course seem personal			2
Obtain broader viewpoints			5
TV interesting, new, different	1	2	5
Lectures good; to the point	7		2
Lectures not interrupted with trivial questions			7
Quality superior to that of conventional		8	6
Visual aids, panels, guests good		2	6
More material is given		2	6
Fits schedule—no disadvantages		1	5
No answer	2		

[1] N represents the number of students who indicated that they were continuing with the next term of the televised sequence. Several respondents reported more than one reason for continuing, consequently the total number of comments may be greater than the number of respondents.

Table 82

FREQUENCY TABLE OF THE COMMENTS OF STUDENTS IN THE ENGLISH COMPOSITION TELEVISION COURSE

	UO	*OSC*	*OCE*
N²=	82	37	91
Like most			
Professor is good	25	13	23
Well prepared lectures—material well organized—cover more material—quality good	20	5	7
Professor sticks to subject—no interruptions from class	11	3	4
Contact with other camupses—different viewpoints	8	9	14
See and hear better—holds attention	5	5	2
Small classes—easier and more relaxing	11	8	4
Visual aids are good	4	0	3
Different—novel means of instruction	6	2	1
Dislike most			
No personal contact—no questions or discussion during class	26	9	28
Professor not organized	3	5	10
Learn less	10	5	19
TV not good for Composition	4	0	1
Professor from another campus	2	0	0
Hard to pay attention—less stimulating	7	2	9
Professor can't work directly with the student	6	0	4

[1] UO, University of Oregon; OSC, Oregon State College; OCE, Oregon College College of Education.

[2] N represents the number of students who indicated that they were continuing with the next term of the televised sequence. Several respondents reported more than one reason for continuing, consequently the total number of comments may be greater than the number of respondents.

Table 83

REASONS CITED BY ENGLISH COMPOSITION STUDENTS FOR CONTINUING WITH TELEVISED COURSE

	*OCE*¹	*OSC*	*UO*	*WU*
N²=	71	35	35	14
Professor is good	3		2	1
Want to stick with the sequence	2		12	
Discussion professor good	4	4	3	1
Used to TV—do better in it	3	1	3	
Fits in schedule		2	5	
Learn more—lectures well prepared	4	4	4	
Like the course	3		1	
A change from standard—learn as much			1	
Illustrative material good			2	
Easier		3		
Cannot change because of difference in material; must stay in sequence		16		
Contact with other schools		1		
No interruptions in class	1	1		
Only course offered	53			
On semester system—can't change				14
No answer	3	0	0	0

[1] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

[2] N represents the number of students who indicated that they were continuing with the next term of the televised sequence. Several respondents reported more than one reason for continuing, consequently, the total number of comments may be greater than the number of respondents.

Table 84

STUDENT PREFERENCES FOR METHODS OF INSTRUCTION

	Chemistry		*Appreciation of Literature*			*English Composition*			
	*OSC*¹	*UO*	*OCE*	*OSC*	*UO*	*OCE*	*OSC*	*UO*	*WU*
N=	43	35	24	66	115	56	47	66	25
Which do you prefer for the next course in this sequence?									
Regular class taught by someone on my own campus	16% (7)	20% (7)	25% (6)	45% (30)	18% (21)	59% (33)	28% (13)	42% (28)	84% (21)
Inter-camupus TV as it is being taught	82% (35)	80% (28)	75% (18)	52% (34)	75% (86)	39% (22)	68% (32)	50% (33)	12% (3)
No answer	2% (1)	0% (0)	0% (0)	3% (2)	7% (8)	2% (1)	4% (2)	8% (5)	4% (1)
								Chi square†=72.347*	
TV course involving faculty and students of my school only	19% (8)	14% (5)	13% (3)	21% (14)	16% (19)	29% (16)	23% (11)	15% (10)	40% (10)
Inter-campus TV as it is being taught	81% (35)	86% (30)	79% (19)	79% (52)	77% (88)	62% (35)	57% (32)	74% (49)	36% (9)
No answer	0% (0)	0% (0)	8% (2)	0% (0)	7% (8)	9% (5)	9% (4)	11% (7)	24% (6)
							Overall Chi square not applicable		
TV course involving faculty and students at my school only	74% (32)	54% (19)	12% (3)	30% (20)	61% (70)	23% (13)	62% (29)	24% (16)	8% (2)
Regular class taught by someone on my own campus	26% (11)	40% (14)	67% (16)	65% (43)	31% (36)	68% (38)	36% (17)	67% (44)	88% (22)
No answer	0% (0)	6% (2)	21% (5)	5% (3)	8% (9)	9% (5)	2% (1)	9% (6)	4% (1)
								Chi square†=79.513*	

[1] OSC, Oregon State College; UO, University of Oregon; OCE, Oregon College of Education; WU, Willamette University.

† No answer excluded in computation of Chi square.

* Significant beyond the 5% level.

Table 85

STUDENT COMPARISONS OF THE EFFECTIVENESS OF CONVENTIONAL AND TELEVISED INSTRUCTION

	Chemistry			*Appreciation of Literature*			*English Composition*		
	OSC[1]	*UO*	*OCE*	*OSC*	*UO*	*OCE*	*OSC*	*UO*	*WU*
N=	43	35	24	66	115	56	47	66	25
How has inter-campus TV instruction compared to conventional instruction									
Lecture presentation									
Much better	53% (23)	49% (17)	29% (7)	24% (16)	33% (38)	11% (6)	8% (4)	15% (10)	4% (7)
Better	28% (12)	34% (12)	33% (8)	50% (33)	41% (47)	36% (20)	45% (21)	39% (26)	8% (2)
Same	19% (8)	14% (5)	29% (7)	15% (10)	21% (24)	28% (16)	32% (15)	24% (16)	20% (5)
Worse	0% (0)	0% (0)	0% (2)	6% (4)	4% (5)	20% (11)	15% (7)	14% (9)	56% (14)
Much worse	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	5% (3)	0% (0)	6% (4)	12% (3)
No answer	0% (0)	3% (1)	0% (0)	5% (3)	1% (0)	0% (0)	0% (0)	2% (1)	0% (0)
				Chi square categories: (1) much better, better (2), same, worse, much worse: 8 degrees of freedom				Chi square†=64.627*	
Standards of student achievement									
Much better	14% (6)	3% (1)	12% (3)	5% (3)	7% (8)	0% (0)	2% (1)	0% (0)	0% (0)
Better	33% (14)	31% (11)	29% (7)	18% (12)	23% (27)	13% (7)	17% (8)	14% (9)	12% (3)
Same	42% (18)	49% (17)	42% (10)	50% (33)	63% (73)	57% (32)	53% (25)	51% (34)	24% (6)
Worse	9% (4)	17% (6)	17% (4)	21% (14)	3% (3)	18% (10)	26% (12)	26% (17)	44% (11)
Much worse	0% (0)	0% (0)	0% (0)	3% (2)	1% (1)	5% (3)	2% (1)	6% (4)	16% (4)
No answer	2% (1)	0% (0)	0% (0)	3% (2)	3% (3)	7% (4)	0% (0)	3% (2)	4% (1)
				Chi square categories: (1) much better, better (2), same, worse, much worse; 16 degrees of freedom				Chi square†=76.058*	
Adequacy of student-teacher relationship									
Much better	5% (2)	0% (0)	17% (4)	0% (0)	4% (5)	0% (0)	4% (2)	2% (1)	0% (0)
Better	12% (5)	3% (1)	8% (2)	6% (4)	12% (14)	5% (3)	17% (8)	11% (7)	0% (0)
Same	37% (16)	34% (12)	25% (6)	15% (10)	52% (60)	16% (9)	17% (8)	27% (18)	24% (6)
Worse	37% (16)	51% (18)	42% (10)	56% (37)	26% (30)	55% (31)	51% (24)	38% (25)	48% (12)
Much worse	7% (3)	12% (4)	4% (1)	18% (12)	4% (4)	22% (12)	11% (5)	18% (12)	28% (7)
No answer	2% (1)	0% (0)	4% (1)	5% (3)	2% (2)	2% (1)	0% (0)	4% (3)	0% (0)
				Chi square categories: (1) much better, better, Same (2), worse, much worse: 8 degrees of freedom				Chi square†=61.086*	
Quality of teaching standards									
Much better	37% (16)	49% (17)	21% (5)	17% (11)	24% (28)	5% (3)	9% (4)	8% (5)	0% (0)
Better	49% (21)	34% (12)	42% (10)	41% (27)	48% (55)	27% (15)	34% (16)	33% (22)	12% (3)
Same	14% (6)	14% (5)	25% (6)	38% (25)	23% (27)	48% (27)	51% (24)	45% (30)	40% (10)
Worse	0% (0)	3% (1)	4% (1)	3% (2)	2% (2)	14% (8)	6% (3)	8% (5)	36% (9)
Much worse	0% (0)	0% (0)	0% (0)	1% (1)	1% (1)	2% (1)	0% (0)	0% (0)	8% (2)
No answer	0% (0)	0% (0)	0% (2)	0% (0)	2% (2)	4% (2)	0% (0)	6% (4)	4% (1)
				Chi square categories: (1) much better, better (2), same, worse, much worse. 8 degrees of freedom				Chi square†=78.575*	
Stimulating Discussion									
Much better	2% (1)	3% (1)	17% (4)	0% (0)	9% (11)	7% (4)	0% (0)	3% (2)	12% (3)
Better	19% (8)	3% (1)	12% (3)	20% (13)	27% (31)	30% (17)	32% (15)	18% (12)	8% (2)
Same	30% (13)	23% (8)	54% (13)	47% (31)	49% (56)	31% (17)	34% (16)	44% (29)	48% (12)
Worse	7% (3)	11% (4)	13% (3)	24% (16)	10% (12)	18% (10)	21% (10)	15% (10)	20% (5)
Much worse	14% (6)	17% (6)	4% (1)	9% (6)	3% (3)	7% (4)	13% (6)	17% (11)	12% (3)
No answer	28% (12)	43% (15)	0% (0)	0% (0)	2% (2)	7% (4)	0% (0)	3% (2)	0% (0)
				Chi square categories: (1) much better, better (2), same (3), worse, much worse: 16 degrees or freedom				Chi square†=31.343*	
Visual Aids									
Much better	58% (25)	52% (18)	33% (8)	27% (18)	43% (50)	13% (7)	11% (5)	12% (8)	0% (0)
Better	24% (10)	31% (11)	34% (8)	45% (30)	39% (45)	32% (18)	40% (19)	43% (28)	44% (11)
Same	9% (4)	14% (5)	17% (4)	17% (11)	13% (15)	32% (18)	40% (19)	30% (20)	36% (9)
Worse	7% (3)	3% (1)	4% (1)	11% (7)	3% (3)	14% (8)	9% (4)	12% (8)	12% (3)
Much worse	0% (0)	0% (0)	4% (1)	0% (0)	1% (1)	2% (1)	0% (0)	0% (0)	4% (1)
No answer	2% (1)	0% (0)	8% (2)	0% (0)	1% (1)	7% (4)	0% (0)	3% (2)	4% (1)
				Chi square categories: (1) much better, (2) better, (3) same, worse, much worse: 16 degrees of freedom.				Chi square†=87.118*	
Satisfaction obtained by students									
Much better	19% (8)	8% (3)	17% (4)	11% (7)	16% (18)	0% (0)	6% (3)	6% (4)	0% (0)
Better	32% (14)	43% (15)	25% (6)	26% (17)	39% (45)	12% (7)	28% (13)	17% (11)	4% (1)
Same	30% (13)	26% (9)	33% (8)	38% (25)	30% (35)	27% (15)	36% (17)	30% (20)	20% (5)
Worse	12% (5)	17% (6)	17% (4)	20% (13)	14% (16)	46% (26)	26% (12)	41% (27)	56% (14)
Much worse	2% (1)	3% (1)	8% (2)	4% (3)	0% (0)	11% (6)	4% (2)	6% (4)	16% (4)
No answer	5% (2)	3% (1)	0% (0)	1% (1)	1% (1)	4% (2)	0% (0)	0% (0)	4% (1)
				Chi square categories: (1) much better, better (2) same (3) worse, much worse. 16 degrees of freedom.				Chi square†=67.663*	

Table 85—*Continued*

Stimulating student learning									
Much better	26% (11)	14% (5)	17% (4)	9% (6)	16% (19)	5% (3)	4% (2)	2% (1)	0% (0)
Better	30% (13)	43% (15)	37% (9)	36% (24)	37% (43)	5% (3)	21% (10)	20% (13)	4% (1)
Same	35% (15)	37% (13)	29% (7)	29% (19)	36% (41)	31% (17)	41% (19)	33% (22)	12% (3)
Worse	7% (3)	6% (2)	17% (4)	21% (14)	8% (9)	38% (21)	28% (13)	30% (20)	52% (13)
Much worse	2% (1)	0% (0)	0% (0)	5% (3)	2% (2)	14% (8)	6% (3)	14% (9)	32% (8)
No answer	0% (0)	0% (0)	0% (0)		1% (1)	7% (4)	0% (0)	1% (1)	0% (0)

Chi square categories: (1) much better, better (2) same (3) worse, much worse: 16 degrees of freedom. Chi square†=120.964*

[1] OSC, Oregon State College; UO, University of Oregon; OCE, Oregon College of Education; WU, Willamette University.
† No answer excluded in computation of Chi square.
* Significant beyond the 5% level.

Table 86

SPECIFIC DETERMINANTS OF ATTITUDES AS REPORTED BY STUDENTS[1]

	Chemistry			*Appreciation of Literature*			*English Composition*		
	OSC[2]	*UO*	*OCE*	*OSC*	*UO*	*OCE*	*OSC*	*UO*	*WU*
N=	43	35	24	66	115	56	47	66	25
What do you think that your attitude toward the TV course is based upon?									
My feeling about course content									
Strongly agree	30% (13)	26% (9)	25% (6)	14% (9)	24% (28)	16% (9)	9% (4)	8% (5)	28% (7)
Agree	53% (23)	63% (22)	63% (15)	53% (35)	57% (65)	55% (31)	57% (27)	57% (38)	40% (10)
Undecided	7% (3)	5% (2)	4% (1)	11% (7)	5% (6)	13% (7)	21% (10)	17% (11)	0% (0)
Disagree	5% (2)	6% (2)	8% (2)	21% (14)	10% (12)	9% (5)	9% (4)	17% (11)	24% (6)
Strongly disagree	5% (2)	0% (0)	0% (0)	1% (1)	2% (2)	7% (4)	4% (2)	1% (1)	8% (2)
No answer	0% (0)	0% (0)	0% (0)	0% (0)	2% (2)	0% (0)	0% (0)	0% (0)	0% (0)
Chi square categories (1) strongly agree, agree (2) undecided, disagree, strongly disagree: 8 degrees of freedom. Chi square†=19.324									
The fact that the course comes from another campus									
Strongly agree	0% (0)	3% (1)	0% (0)	0% (0)	0% (0)	0% (0)	2% (1)	0% (0)	0% (0)
Agree	0% (0)	20% (7)	21% (5)	21% (14)	5% (6)	4% (2)	26% (12)	14% (9)	12% (3)
Undecided	39% (17)	23% (8)	21% (5)	20% (13)	33% (38)	27% (15)	13% (6)	17% (11)	4% (1)
Disagree	33% (14)	37% (13)	42% (10)	50% (33)	43% (49)	34% (19)	38% (18)	51% (34)	48% (12)
Strongly disagree	19% (8)	17% (6)	12% (3)	8% (5)	13% (15)	23% (13)	19% (9)	18% (12)	36% (9)
No answer	9% (4)	0% (0)	4% (1)	1% (1)	6% (7)	12% (7)	2% (1)	0% (0)	0% (0)
Chi square categories (1) strongly agree, agree, undecided (2) disagree, strongly disagree: 8 degrees of freedom. Chi square†=9.603									
The attitude my discussion instructor has about TV teaching									
Strongly agree	12% (5)	0% (0)	4% (1)	3% (2)	8% (9)	2% (1)	6% (3)	5% (3)	0% (0)
Agree	14% (6)	9% (3)	25% (6)	17% (11)	35% (40)	9% (5)	26% (12)	18% (12)	20% (5)
Undecided	23% (10)	40% (14)	17% (4)	30% (20)	22% (25)	34% (19)	30% (14)	21% (14)	4% (1)
Disagree	28% (12)	31% (11)	42% (10)	33% (22)	23% (27)	39% (22)	32% (15)	38% (25)	52% (13)
Strongly disagree	16% (7)	20% (7)	4% (1)	8% (5)	11% (13)	11% (6)	4% (2)	18% (12)	24% (6)
No answer	7% (3)	0% (0)	8% (2)	9% (6)	1% (1)	5% (3)	2% (1)	0% (0)	0% (0)
Chi square categories (1) strongly agree, agree (2) undecided (3) disagree, strongly disagree: 16 degrees of freedom. Chi square†=45.638*									
What other students say about the course									
Strongly agree	0% (0)	0% (0)	0% (0)	0% (0)	1% (1)	0% (0)	2% (1)	0% (0)	0% (0)
Agree	28% (12)	20% (7)	21% (5)	15% (10)	20% (23)	13% (7)	19% (9)	9% (6)	12% (3)
Undecided	9% (4)	14% (5)	17% (4)	15% (10)	17% (20)	18% (10)	17% (8)	12% (8)	16% (4)
Disagree	42% (18)	52% (18)	50% (12)	55% (36)	43% (50)	46% (26)	53% (25)	59% (39)	56% (14)
Strongly disagree	9% (4)	14% (5)	0% (0)	15% (10)	16% (18)	23% (13)	9% (4)	18% (12)	16% (4)
No answer	12% (5)	0% (0)	12% (3)	0% (0)	3% (3)	0% (0)	0% (0)	1% (1)	0% (0)
Chi square categories (1) strongly agree, agree, undecided (2) disagree, strongly disagree: 8 degrees of freedom. Chi square†=9.275*									
The way I feel about the TV instructor									
Strongly agree	7% (3)	3% (1)	8% (2)	8% (5)	25% (29)	14% (8)	17% (8)	15% (10)	0% (0)
Agree	18% (8)	17% (6)	42% (10)	30% (20)	46% (53)	29% (16)	43% (20)	48% (32)	16% (4)
Undecided	32% (14)	23% (8)	4% (1)	21% (14)	12% (14)	12% (7)	8% (4)	4% (3)	4% (1)
Disagree	19% (8)	37% (13)	29% (7)	32% (21)	12% (14)	34% (19)	21% (10)	24% (16)	44% (11)
Strongly disagree	12% (5)	20% (7)	9% (2)	9% (6)	5% (5)	11% (6)	11% (5)	6% (4)	36% (9)
No answer	12% (5)	0% (0)	8% (2)	0% (0)	0% (0)	0% (0)	0% (0)	1% (1)	0% (0)
Chi square categories (1) strongly agree, agree (2) undecided, disagree, strongly disagree: 8 degrees of freedom. Chi square†=64.255*									

Table 86—*Continued*

The grade I expected in the course																		
Strongly agree	7%	(3)	0%	(0)	4%	(1)	3%	(2)	1%	(1)	4%	(2)	2%	(1)	6%	(4)	0%	(0)
Agree	35%	(15)	31%	(11)	29%	(7)	32%	(21)	21%	(24)	20%	(11)	26%	(12)	23%	(15)	4%	(1)
Undecided	9%	(4)	12%	(4)	9%	(2)	20%	(13)	23%	(26)	21%	(12)	23%	(11)	15%	(10)	8%	(2)
Disagree	33%	(14)	46%	(16)	54%	(13)	38%	(25)	44%	(51)	32%	(18)	41%	(19)	48%	(32)	36%	(9)
Strongly disagree	16%	(7)	11%	(4)	0%	(0)	7%	(5)	10%	(12)	18%	(10)	6%	(3)	8%	(5)	52%	(13)
No answer	0%	(0)	0%	(0)	4%	(1)	0%	(0)	1%	(1)	5%	(3)	2%	(1)	0%	(0)	0%	(0)
Chi square categories: (1) strongly agree, agree, undecided (2) disagree, strongly disagree: 8 degrees of freedom. Chi square†=15.143*																		
The way I feel about the TV instructor																		
Strongly agree	23%	(10)	37%	(13)	21%	(5)	15%	(10)	36%	(42)	14%	(8)	13%	(6)	14%	(9)	40%	(10)
Agree	54%	(23)	40%	(14)	29%	(7)	47%	(31)	41%	(47)	39%	(22)	34%	(16)	44%	(29)	12%	(3)
Undecided	5%	(2)	3%	(1)	25%	(6)	9%	(6)	9%	(10)	13%	(7)	15%	(7)	9%	(6)	4%	(1)
Disagree	9%	(4)	14%	(5)	8%	(2)	24%	(16)	8%	(9)	16%	(9)	30%	(14)	23%	(15)	32%	(8)
Strongly disagree	7%	(3)	6%	(2)	4%	(1)	5%	(3)	3%	(4)	14%	(8)	6%	(3)	7%	(5)	12%	(3)
No answer	2%	(1)	0%	(0)	13%	(3)	0%	(0)	3%	(3)	4%	(2)	2%	(1)	3%	(2)	0%	(0)
Chi square categories: (1) strongly agree (2) agree (3) undecided, disagree, strongly disagree: 16 degrees of freedom Chi square†=49.209*																		
My attitude was set because I came into the course																		
Strongly agree	0%	(0)	3%	(1)	0%	(0)	3%	(2)	2%	(2)	0%	(0)	0%	(0)	0%	(0)	0%	(0)
Agree	5%	(2)	6%	(2)	0%	(0)	5%	(3)	8%	(9)	5%	(3)	6%	(3)	3%	(2)	0%	(0)
Undecided	5%	(2)	3%	(1)	8%	(2)	9%	(6)	12%	(14)	11%	(6)	19%	(9)	8%	(5)	4%	(1)
Disagree	58%	(25)	57%	(20)	46%	(11)	45%	(30)	52%	(60)	46%	(26)	41%	(19)	56%	(37)	40%	(10)
Strongly disagree	23%	(10)	31%	(11)	33%	(8)	38%	(25)	24%	(28)	34%	(19)	34%	(16)	33%	(22)	56%	(14)
No answer	9%	(4)	0%	(0)	13%	(3)	0%	(0)	2%	(2)	4%	(2)	0%	(0)	0%	(0)	0%	(0)
Overall Chi square not applicable																		

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[1] These items were intentionally phrased in such a direct manner in an attempt to obtain the student's perception of factors determining his attitude.

[2] OSC, Oregon State College; UO, University of Oregon; OCE, Oregon College of Education; WU, Willamette University.

* Significant beyond the 5% level. Combined categories for Chi square were not constant because of variation of size of theoretical cell frequency.

† No anwer excluded in computation of Chi square.

Appendix B

General Summary of Interviews with Students of Televised Chemistry and History Courses[1]

The following statements are general conclusions resulting from a series of interviews of students in the televised Chemistry and History courses during the 1957-58 school year. They tend to support or supplement the generalizations regarding student attitudes which have already been discussed in this report. They are listed under the following categories:

1. General level of student acceptance.
2. Inter-institutional factors as they related to attitudes.
3. Determinants of attitude toward inter-institutional television instruction.

General Level of Student Acceptance.

The majority of the students in both Chemistry and History at the originating and receiving institutions was generally favorable toward inter-institutional television. The majority was larger in Chemistry than in History.

Inter-institutional Factors as They Related to Attitudes.

In Chemistry, the proportion of favorable response was larger at the receiving institutions than at the originating institution. In History the proportion of favorable response was considerably larger at the originating institution.

Most of the differences in attitude between History and Chemistry students (in which History students showed a smaller proportion of favorable response) were due to less favorable responses from the History students at the receiving institution. The data suggest that their less favorable attitudes may be attributed in part to (1) the smaller campus and possibly greater teacher-pupil interaction as part of the regular campus atmosphere; (2) halo effect of an on-campus professor; (3) a lecture subject which might be more difficult to present on television than demonstration subjects, and (4) the degree to which the personality of a professor unknown to students at other campuses projects itself on television.

Students were more satisfied with their discussion leaders on campuses where the television courses originated. This might be attributed to the presence of the television professor on the campus and more adequate communication that would exist between him and the discussion leaders. (The latter is a basic factor in student attitudes, i.e., in practically all experimental conditions the proportion of favorable response at the home campus exceeded that of the receiving campus. Such differences have implications in terms of access to professor, etc.)

The majority of Chemistry and History students felt that course origination from a campus other than their own was not undesirable.

The majority of Chemistry and History students were favorable toward the continuation of inter-institutional television courses on the campuses involved in the study.

Differences and Determinants of Attitudes.

Most of the students did not feel that the attitudes of their discussion leaders affected their own opinions of the television courses.

Those who thought the discussion leader's attiudes had some effect upon their own attitudes felt that they were not negatively influenced toward the television courses.

There is little evidence to indicate that the differences in attitudes of the History and Chemistry students toward their respective television courses could be attributed to their classmates, but it must be recognized that the interaction of satisfied or dissatisfied students causes a certain degree of reinforcement or change of opinion.

The majority of students felt that courses which lend themselves to the presentation of experiments and demonstrations can be well adapted to television.

The majority of Chemistry and History students thought that science courses were more desirable on television than other types of courses.

A majority of both History and Chemistry students thought that the course material was easier to learn and that they learned more on television than they would have in a conventional section.

The "nearness" of material presented (pictures, demonstrations) was mentioned as an important factor in creating favorable attitudes toward television courses.

Visual aids were important to both History and Chemistry students.

Instruction involving experiments and demonstrations seemed to draw the most favorable reactions from students.

A majority of both History and Chemistry students were not concerned by not being able to ask questions during class.

Most of the interviewees thought their grades would be the same in the television course as they would have been in a conventional class.

Students said they had a tendency to study less for television classes.

The reputation of the professor selected to teach the course was most frequently mentioned by the History students as the qualification for taking another course in the same subject area.

The capability of the professor, the degree to which course materials organized and prepared, and the most complete utilization of useful visual aids were deemed by students as the desirable features of inter-institutional television regardless of the kind of subject matter presented.

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[1] Unpublished doctoral dissertation, Fred Scheller, Jr., *A Comparative Study of the Differences in Student Attitude Toward History and Chemistry Television Courses,* University of Oregon, 1959.

Appendix C

Report of Reactions to Televised Teaching by Professors Who Taught Educational Psychology: Learning

1. *Re use of TV for instructional purposes.*

We are sold on the possibilities of the use of this medium.

When straightforward presentation of material is the teacher's purpose, TV can be used as well as or better than the classroom lecture.

Material may be presented to much larger groups over TV than can be accommodated in classrooms.

Probably little is being done in most classrooms that could not be done just as well over TV.

2. *How we feel about teaching by television now compared with the way we felt at the termination of our television teaching experience.*

We are even more enthusiastic now about the potential of TV instruction than we were when we ended our "inter-institutional" TV course in Educational Psychology. Since then we have given this same course over TV on two different occasions, once as an extension course and once in connection with our own classes, in Educational Psychology. After each of these presentations our enthusiasm for the use of TV has increased.

We feel that what we did in "inter-institutional TV" was merely an attempt at a different technique; it was in no real sense an "experiment". We would certainly like to experiment further, but would like to do so under appropriate conditions of time, facility, and freedom to experiment. We would like to examine the possibilities of home versus classroom TV viewing, for instance, as well as whether the number of hours used for TV viewing have to be equated with the number of hours usually allocated to class attendance, as well as many other questions.

3. *Inter-institutional TV versus intra-institutional TV.*

The great advantage of educational TV is that it can save a great deal of instructional time by using one preparation to teach many students at the same time. As far more students may be reached through inter-institutional TV, obviously this is what should be used.

Most of the seeming disadvantages which have been pointed out in this area are manufactured disadvantages, not real ones. Suppose that the "best" TV instructor in the nation could be obtained to give his course to our students. Would they refuse to learn from him simply because he did not represent the local institution? Students earnestly desirous of obtaining an education would accept such a teacher without further question. They would do this whether the outside instructor came from Oxford, Harvard, Good Old Siwash—or from a sister institution in the state system.

Regardless of a teacher's school affiliation, his TV presentation, however good, may be sabotaged by local teachers if they feel that TV teaching threatens their jobs or their reputations. This danger can be averted by proper allocation of job function. Determining such division of labor is itself a proper subject for research; it should not be decided on a basis of opinion.

One specific suggestion is to have all institutions represented in the planning of the course, the course objectives, and the actual giving of the TV presentations.

4. *Adaptability of the Educational Psychology course to TV teaching.*

The Educational Psychology course is certainly one which can be taught effectively over TV. This does not mean that classroom methods may be transferred directly to the TV studio. The TV instructor should be given sufficient time to determine what changes to make in his presentation to fit the mechanics of TV. He must be interested in working out details of the new method. He should be allowed to experiment, really experiment, and not be expected to arrive at perfect solutions to all difficulties immediately. (Even the most successful classroom techinques were not all discovered in one term under pressure.) In addition to knowledge of subject matter, skill and ingenuity are needed, for this project requires both instructional specialists and those who already know how to use TV.

5. *Would other courses be taught more successfully over TV than Educational Psychology?*

Probably any course may be taught, and taught well, over TV. This is clearly a question that should be answered by experimentation rather than by opinion.

Probably not enough time nor enough thinking has been given as to how to adapt a course to TV nor how to adapt the materials of a course to TV. We have spent too much time trying to produce entire courses without adequate planning and research. *Suggestion*: Instead of presenting complete courses, try experimenting with teaching selected areas of courses in order to perfect the medium and to find out what TV teaching can best accomplish.

6. *Would we like to continue teaching Educational Psychology on inter-institutional TV or on intra-institutional TV?*

Yes, we would like to continue teaching a TV course under either an inter-institutional or an intra-institutional plan, under appropriate conditions in which to plan material.

7. *The public at large can see courses given over TV.*

It is almost six months since we gave our last TV lesson, but people are still approaching us with comments and questions about some point we presented on the air. No telling how many people who had nothing to do with our classes saw what we were doing and were interested in the material that was presented. This probably has value even though we cannot determine precisely how many people did listen.

The public viewing of TV courses at the college level or at any school level may be one of the best things that has happened in education for a long time. If the courses are effectively presented, we can think of no better way of informing the public about what is actually being done in the schools and colleges. This is a factual method of building public relations, and it is far better than merely telling the people who pay the education bills how good a job the schools are doing.

8. *What problems seemed to be associated with televised teaching from the standpoint of the television professor?*

a. We did not know enough about how to make use of TV as a teaching medium.

b. We did not have enough time in which to prepare our material.

c. We did not realize the necessity for having the entire course carefully and precisely planned and organized before the course was ever started.

d. We were not satisfied with merely doing on TV what we were used to doing in class. We felt then—and we know now—that the problems of TV education will not be solved simply by putting a professor in front of a camera and telling him to go ahead and teach.

e. We wanted to experiment with different teaching variables to determine what methods would be most effective on TV, but found that under our circumstances, this was impossible. Trying to give an entire course on TV without such experimentation is almost blind trial and error.

f. We found that presenting a TV course produced great stress and tension, which resulted from the conditions just mentioned.

Despite the above, we remain convinced that TV has tremendous value for education. We want to do more TV teaching, but on the basis of experience, we would insist on a more scientific approach.

9. *Would we like to see inter-institutional courses regularly offered over TV in the area of professional education?*

Yes, because we believe in the possibilities of TV instruction. It does not matter whether we give the courses, whether other members of our own staff give them, or whether they are given by members of other faculties. Education, above all other fields, should be in the forefront of educational television, determined to utilize all the values of this or any other medium.

Whoever gives such courses, however, should have ample time and facilities available. The necessity for experimentation instead of hit-or-miss trial has already been emphasized.

10. *The efficiency of the organizational plan in which regular members of the staff were used as discussion instructors on the other campuses.*

We are not in favor of continuing this method, as we believe that self-contained TV courses offer much greater teaching possibilities.

However, before the course is put on the air, instructors in all the schools concerned should have an opportunity to *see the course.* This is now possible through the use of video tape. Then no instructor can feel that he is buying a pig in a poke. If he objects to method or content, this can be argued out before the course is given. Of course there will be conflicts of opinion, but certainly a reasonable compromise is possible.

Furthermore, each campus should be represented in the actual giving of the course, if no more than by having an instructor make an appearance as a guest during an early presentation.

Some provision should also be made for students who have questions and want to discuss them. Such questioning periods could be the very place where the most effective personal teaching might be done, and it doesn't have to emanate from the TV instructor. This is the province of any instructor in the area, at any school. The very fact that the TV instructor will do the bulk of the presentation will add to the time available to other instructors for this type of student conference.

11. *Would we like to have had our course entirely on TV rather than have supplementary, on-campus conventional instruction?*

Probably a self-contained TV course is more satisfactory, but we would like to set up different situations under experimental control to find out exactly what results might be obtained under different conditions. Various discussion techniques might be tried; so could different ways of handling the sections. One group of students might try taking the course and have no contact wtih the instructor or any assistants until the final examination. Students might try meeting among themselves at times during the presentation of the course. All sorts of variables could be set up and examined to discover whether or not any of them made any difference in student learning.

No one actually knows what difference these variables make. No one knows whether students need more or less time to learn over TV than they do in regular classes. The need for experimental evidence is so great that we find it difficult to understand why an experimental approach to TV problems has not been attempted.

Possibly the most important element in student learning, in class or over TV, is the desire of the student to learn. Students who want to learn, regardless of the mechanics used in teaching, will probably out-perform those students who are just going through motions.

12. *How does inter-institutional TV compare with conventional instruction in terms of*:

a. *Holding student attention.* This depends on what is done in class or on TV. A television course may be more attention-getting or less attention-getting than a regular class. "Attention-getting" is not a function of TV: it is a function of what the instructor does.

b. *Standards of student achievement.* We found little difference, as far as our present methods of evaluation are concerned.

c. *Adequacy of student-teacher relationship.* When we met students once a week (in addition to the TV presentations) we found that our being on TV affected them favorably. We have some evidence to show that they liked the two of us together on TV than they liked either of us alone in class. This, too, needs experimentation.

Probably too much attention is paid to the importance of this relationship and too little to the student's desire to learn. The student gets a rather intimate view of the instructor on TV; the relationship is not exactly a mutual one, but it may be very effective without the student ever coming into personal contact with the instructor.

d. *Quality of teaching standards.* Those for TV are probably higher than class standards. It is possible that the privacy of the class sometimes produces laxness, whereas the openness of TV guards against relaxing of standards.

e. *Feedback to the television instructor; opportunity for anticipating student needs.* This is largely a matter of mechanics. A good lecturer, for instance, anticipates questions; a good TV presentation would anticipate most questions.

We doubt whether it is any harder to get students to send in good questions to a TV instructor than it is for a class instructor to get good questions. The time-killing questions often asked in class, though possibly of some interest to an individual student, are better omitted altogther, as they are on TV.

f. *Use of movies, film clips, etc.* We find it far easier to show a movie once on TV than to repeat this same movie for each individual class. This is a positive gain for TV teaching. Furthermore, TV provides a better view of many visual aids than is possible for students to obtain in class.

g. *Our personal satisfaction from teaching a course.* There is just as much satisfaction for us in teaching over TV as in a regular class. We see little difference. Once the initial fear of the camera is overcome, the actual feeling in teaching is pretty much the same. Talking to the cameraman or to people in the studio provide whatever human feeling is needed.

h. *Degree of satisfaction obtained by students.* We don't know, but we have heard students praise TV and students deny it any value. More important would be objective evidence of how much students learn from different presentations.

13. *What aspect of the inter-campus television program would you suggest for further research?*

As far as we can see, the interest so far has centered about measuring students' opinions. Actually, these are somewhat beside the point. We aren't making much of an attempt to measure their attitudes or opinions about their regular classes. One is just as important as the other.

We seem to assume that everything that goes on in conventional classes is satisfactory because that is what we are used to. Classes may bore students just as TV presentations may bore students; either one may fascinate them.

The real problems for research in connection with TV are those connected with the use of TV. Which teaching methods are best suited for TV; which are best for the classroom? Which techniques get the best results? Which subjects or aspects of subjects are best suited to TV teaching? Which phases of instruction can *best* be handled by TV; which by classroom instruction?

14. *What do you feel to be the chief advantages of TV teaching?*

a. Teachers will prepare material more carefuly for TV presentation than they do for presentation in class.

b. Presenting this material once is far better than going over the same material for every class. After one goes over the same material several times or more in the same day, he gets pretty tired of it, regardless of how deeply interested he may be in his subject.

c. Time saved in this way may be spent in doing those phases of teaching which can best be done by personal contact with students. (It will be recalled that many teachers will be able to save time in this way because only one of these teachers has to prepare the TV material.)

d. If a teacher gets to see himself on a kinescope film, he has a chance to study himself in a way not possible to a classroom teacher. (Making the TV presentation makes the kinescope or electronic tape picture possible.) He sees himself and hears himself as he looks and sounds in the classroom. An honest self-evaluation is possible under these circumstances now as it has never been before.

e. Television opens the classroom door so that the person paying for education can see what is being done with his money.

f. Television instruction makes it possible for the person who is not attending school to continue his education.

15. *The chief disadvantages of TV teaching.*

The major disadvantage of what has been done so far is putting on programs before these programs were really ready. Perhaps, instead of putting on entire courses, had we compromised by putting on a few sections of some courses, or just some phase of a course, and then spent the rest of our time and energy on making these presentations as effective as possible, we might have accomplished more.

Part of our efforts should have been devoted to making a more controlled attempt at finding out what can be done well over TV and what should be left to the classroom teacher. This means scientific investigation, which we have already emphasized.

One disadvantage of TV teaching, as we have practiced it, is that students have been forced to come to class to look at us as though they were attending regular class sessions. They might just as well have listened at home and watched us on home receivers. This may have helped produce an attitude antagonistic to TV teaching.

16. *What uses do you see for inter-campus TV instruction in the future?*

We see great possibilities for inter-campus television instruction in the future. Not only would it be posisble to have the same course given throughout a whole state system, but this could conceivably extend nationally. Colleges would, of course, have to overcome their unwillingness to give credit for education gained off campus.

We suggest that the colleges be more willing to spend their time, energy, and money in research to determine what their objectives are and how these objectives may be measured. Then they might use these evaluative devices and not ask whether a person learned by going to class under the immediate supervision of a teacher, whether he learned through television, or whether he learned through reading books on his own initiative. The basic question should be: Does the student know the subject material well enough to apply it? If he does, give him credit for it; if not, withhold credit regardless of what kind of instruction he may have had.

Appendix D

Report of Reactions to Televised Teaching by Professor Who Taught English Composition

Looking back on my television experience—something I do, I am happy to say, quite infrequently—I cannot avoid a sense of failure. I have no difficulty finding reasons for this feeling. I was told before the fact, during the commission of the crime, and afterwards, that English Composition just couldn't be taught on television. I was told, and am told, that college professors are morbidly jealous of each other and will go to any lengths to keep another pedagogue from trampling mud into their classrooms. I was told that students resented being educated by a collection of squiggly lines on a screen that they couldn't talk back to or ask questions of. Six months later, I am not sure that I agree completely with all these. Certainly I could testify with both hands on the book that I have not been mistreated by any of my colleagues, and yet I suspect that their kindness has been more often than not an indication of their generosity rather than their agreement either with my methods or with the aims of the television course. Perhaps there is some truth in all of these, and undoubtedly much of my discontent arises from having failed to come up to my own preconceptions of myself as a teacher, television or otherwise. I shall not dwell on the latter reason, having little stomach either for psychiatrists' couches or Communist cells.

Reasons, I repeat, seem to abound, and I can flush out a covey of them. Let me take aim at a prominent one. The unique part of the television experiment in which I participated was its inter-institutional aspect—and this bird wears all the school colors. English composition might seem to someone who believes that the English instructor is a settled, sedentary creature, and that the less favored of his subjects—composition—is similarly cut, dried and stored away, to be a courtly, gentlemanly pursuit, free of the athletic controversies that stir up more virile subjects. Nothing could be further from the truth. New battles are being joined every day between liberals and conservatives on the Grammar and Usage fronts, and old ones having as their bone of contention the very content of the course rage on undiminished. In the four institutions participating in the experiment, three widely divergent concepts of the course exist. While it is true that good writing is one of the objectives of each, it is by no means a common primary objective, and there are militant differences of opinion about what kinds of good writing are worth striving for. Two institutions focus almost entirely on the development of ideas in expository patterns and spend little or no class time on grammar, punctuation, or spelling; one devotes almost the entire first quarter to the study of these mechanics, and some of the other two quarters to review; and one institution spends a great deal of time in the study and imitation of belletristic writing. Each institution, and each indoctrinated instructor, seems to believe in one of these prescriptions as if it has been handed down on the mountain. During the year I was reproached several times by a representative of one institution or another for not teaching "their" course. I was reproached mildly, but my nerves were out on stalks most of the year—which may, of course, account for these animadversions.

One other reason. It seems to me that the failure of the television experiment in English Composition was taken for granted even before it began. As I have mentioned before, I had no experience with the envy, the animosity, and the back-biting I had been told to prepare for. Almost all of my colleagues were generous with their time and mild in their criticisms. But their most typical attitude toward me was one of sympathy, the sort of sympathy one feels for a man who is going to be hanged, a man who is guilty as hell but who just didn't know what he was doing when he committed his crime. They all assumed that I was engaged in performing a task that was not only unpleasant, but totally useless. Now, six months later, I don't believe that it was quite so unpleasant an experience as they thought—I am ham enough to enjoy any kind of theatrical exposure—but I am afraid that they convinced me of the uselessness of my efforts pretty early in the year.

Appendix E

Final Report of Professor on Televised Teaching of General Chemistry

GENERAL CHEMISTRY VIA TELEVISION 1958-59

Instructor's Report

The effectiveness of any method of teaching, substantiated or not by objective measurements is evaluated largely by operational outcomes whose worth for the most part is determined by the judgmental analysis of those intimately concerned with the course. This report is not intended to be a justification of my work in the project, but instead, it is a summary of impressions and opinions derived from day to day teaching and based upon such matters as course content and structure, teaching techniques, testing, grading, enrollment and drop-outs, student-instructor relations, student morale, and the overall environment of television instruction. A few comments regarding the potential uses of the kinescope films of this course are added.

The statistical and official evaluation of this part of the television teaching project is within the province of the research group headed by Dr. John Lallas of the University of Oregon, and the reader is referred to the reports available from that source for a complete evaluation of the general chemistry course via television.

Course Content and Structure

This course was designed to meet the customary level of the first year college chemistry course. This four-credit course was taught by presenting two formal lectures, a demonstration experiment in place of the conventional laboratory, an informal session comparable in some respects to the traditional recitation, and a written quiz each week. The course was designed primarily for students who have reasonably sufficient science and mathematics preparation to permit quantitative treatment of most areas typically encountered in the first year course. The students, for example, were encouraged to use a slide rule, and they worked problems involving logarithms. Performance of the students when measured by the Cooperative ACS examinations was above the national median for the same type students in conventional courses. The level of this course, consequently, may be rated slightly above middle, but not as high as that usually encountered among science majors.

The two lectures each week introduced new material, illustrated problem situations, and supposedly motivated the student to pursue further study for home assignments, special reports, and tests. A great deal of effort was made to develop illustrative materials that made the most use of the television medium, and even most of the traditional demonstrations were modified and adapted to the studio conditions. In place of the five or six illustrative devices (apparatus, charts, photos, etc.) usually used in conventional classroom lecturing, oftentimes a dozen or more could be used because of the time saving features of television instruction. To exhibit a slide or movie clip, for instance, created no delay in the lecture because these visual items can be inserted into the presentation with almost no perceptable lag compared to the typical classroom situation where lights may need lowering, a screen arranged, and a projection machine lined up. Demonstration apparatus could be arranged at stations to which the television cameras moved during the lecture, all of which added up to appreciably altering the pace of the instruction itself.

The weekly demonstration was the most radical departure from conventional teaching procedures in general chemistry. Here, the student was provided a topical outline of the experiment, including space for data, and a report sheet. He watched an experiment performed from which he was required to collect data and information needed to compose a satisfactory report. Among the basic objectives of laboratory, the matter of achieving proficiency in technique was logically altered. The student watched good technique which was described in detail whenever a new procedure was encountered.

Admittedly, the student cannot become personally familiar with manipulative techniques in a televised course of this nature, and partly for this reason, an entirely new objective was set up for the laboratory phase of this course. Since the experiments were performed for the students and their observation, some of the most elegant experiments could be included. Furthermore, the data produced by these experiments were accurate and dependable to the extent that the student could derive meaningful results that illustrated fundamental chemical principles. Experiments specially designed for this course which aimed toward illustrating quantitatively certain aspects of laboratory chemistry included X-ray crystallography, molecular size measurement, renault molecular weights of gases, the gas laws, Faraday's laws, electromotive series, surface chemistry, reaction rates potentionmetric titration, spectrophotometry, phase rule, glass blowing, corrosion, organic synthesis, and gas chromatography. These experiments represent radical departures from the type of experiments usually performed in the freshman laboratory, and at first glance, one might wonder if some of these were too elaborate and advanced for adequate appreciation by the beginning student. There were usually students who failed to understand the primary objective of the experiment, but upon an examination of the student reports and their performances on tests, it is estimated that, for the most part, students not only understood the main purpose of the experiment, but they appreciated the opportunity to see performed an experiment involving apparatus of sufficient precision to give worthwhile results. They saw in operation an automatic analytical balance, a pH meter, precision volt meters and ammeters, a vacuum pump, a tensiometer, and several other basic tools of the modern chemist. Whether this experience is more or less important than manipulative techniques is difficult to ascertain at this point, but one must recognize that the television method cannot be readily adapted to the instruction of manipulative techniques, although this medium is ideal for illustrating complex procedures. Hence, this was a unique goal of the laboratory phase of this course.

The informal discussion session each week was devoted to answering students' questions that were relayed by postcard from each of the various campuses. Oftentimes several students would ask the same question, particularly if a topic had not been adequately discussed or a specially difficult set of homework problems had been assigned. Obviously all duplicate questions could be discussed at one time, thereby obviating the need to repeat these discussions for each section of students in the course. Occasionally, incompleted lecture or experimental material was included in these informal discussions. This session also provided an excellent opportunity to follow up theactual results of the demonstrated experiment because, no matter how carefully it had been rehearsed, the experiments produced new data that occasionally required interpretation after the experiment was performed. The instructor never failed to be thrilled by the successful completion of one of these experiments, and except for only a few regretable instances, the loose ends could be adequately gathered up in the discussion session.

Following the discussion period, a short quiz of about 20 minutes duration was administered each week. This quiz, as a rule, covered the work of the preceeding week and did much to help maintain a high and constant level of motivation and interest in the course. Students who were unable, for varying reasons, to write the test eagerly sought means of writing a make-up test. There was a strong student attitude throughout the whole course to fulfill all assignments.

In addition to the weekly experiment report, a set of homework problems was due each week, and there was nearly 100% performance in handing in these assignments.

Formal instructional materials included "General Chemistry Workbook" by Pierce & Smith, "College Chemistry" by Pauling, along with a complete set of lecture and experiment outlines prepared by the instructor and made available to each student prior to the class in which the material was used. Complete copies of the syllabus prepared for this course are available from the instructor.

Teaching Techniques

Several critical and limiting factors inherent in the television method of instruction must be faced by the instructor. There is obviously a lack of color with present equipment, and many features of chemical instruction involving color must be adapted or modified to the TV medium. The change of color indicators, such as methyl orange and even bromthymol blue are indiscernible. On the other hand, phenolphthalin changes are readily detected because the change from the colored to the colorless form shows a definite change on the gray scale. Many of the subtle colors involved in colloidal phenomena were shown with difficulty.

Other limitations involved the inability of the image orthicon camera to respond properly to the brilliant light produced in common combustion reactions. The intensity of a burning candle was almost the limit, whereas the light from burning magnesium and the thermit reaction required shielding of the camera. The student could experience only indirectly the light so produced. The highlights from clean glassware also presented a problem which was gradually solved by using older (and slightly dusty and dirty) glassware. High level sounds were also ruled out, but by properly timing the discussion, the microphone could be reduced in level without serious difficulty.

In contrast to these difficulties, the TV medium responded beautifully in revealing the meniscus of a liquid in a buret, the contours of white crystals, and the third dimension of molecular and crystal models. Furthermore, the slight sound of "tin cry" was nicely amplified to a level where all could hear it. Some students reported that they could even "feel" it.

Many "tricks" were soon discovered that enhanced the instruction of chemistry via TV. In illustrating rocket fuels for example, a model containing a combustible mixture was ignited in an inverted and stationary position. As soon as the flame issued from the rocket, its stand was titled backward, the camera moved away and upward, and by inverting the image in the camera, the student witnessed a rocket that apparently rose nicely from the pad, gradually traveled upwards in a smooth arc and then disappeared from view. Students wondered if it were the real thing.

Another "trick" involved superimposing the two camera images on the screen where, for instance, a reaction rate was observed, a meter and a clock could be followed all at the same time. Again, the stroboscopic effect of the TV cameras "stopped" the spinning motion in a rotational paper chromatographic separation of food colors within a span of only several seconds time.

One of the most critical limiting factors in television instruction turns out to be both a boon and a bane. The instructor must be continually aware of the fact that the student can see only what is on the screen. In spite of his "front row" position in seeing the lecture or experiment, the student becomes understandably confused when the discussion concerns matters that are outside his field of view. The most vulnerable position of the TV lecturer seems to be in using a blackboard. Even at the best camera angle, only a small amount of material can be produced and viewed on a blackboard. A typical chemical equation must be doubled over onto a second line, and a given panel on the board dare not contain more than five or six lines of writing. Then, the camera must hold the view of the board long enough for the slowest student to copy the material while the instructor withholds distracting comments.

An important factor related to the narrow field of view is the problem of cameraman and producer in sacrificing a "pretty picture" for one that contains the point of primary interest. Even the most careful rehearsing does not entirely eliminate the tendency for the cameraman to include needless and distracting detail. These problems were, however, held to a minimum by a crew who realized these difficulties from the start and they performed admirably in working with the instructor in all matters.

As a boon, the narrow field of view in TV teaching eliminated entirely the distractions of other visual material, the clutter of the classroom, and other diversionary sights. It is largely to this factor that the excellent attention of the student is attributed. He soon finds that he must concentrate on the present scene because it will soon vanish, never to return. Furthermore, he must retain a mental image of the preceding views in order to build up a coherent picture of the whole device or apparatus in question. In several experiments, for instance, the complexity of the apparatus required a panoramic view of its parts. Then, while the experiment was performed, only that part of the apparatus involving the production of data was observed. Even though visiting faculty occasionally criticized this unfortunate narrow view, students who were adapted to the TV method of instruction reported no difficulty, but rather showed a preference for not being distracted by other matters than the ones directly concerned.

The lack of a student audience in the studio may appear to be a major barrier in communication with the students. However, in television instruction, the instructor soon learns that his students are "in the camera". In spite of the inanimate nature of the camera lens, it takes on an imperative command of the instructor's attention and one becomes adjusted quickly to the fact that his students are within that lens. If he fails to produce the material specially for the lens, even to looking into it much as he looks into the eyes of his students in a conventional classroom, he finds he has lost the attention of his class, a consequence that is probably more deadly in TV instruction than in a regular classroom. An instructor on TV has a captive audience only so long as he holds their attention.

Students occasionally wish to view a TV class in the studio. Even though they are encouraged to take the most advantageous positions in the studio, they never return to the studio for a second time because they missed out on the directness of the presentation which was made specially for the TV screen. The best place to see a TV class is, they find, in front of their own TV set.

Since there is no live audience in TV instruction as pursued in this project, it is obviously important that the instructor pace his presentation to match the ability of the students. As a rule, ordinary classroom experience should serve as a guide in this respect, because usually with the added attention factor, the same pace on TV as that developed in a classroom should not be too rapid. Certain techniques must be altered, however, because the TV medium places the instructor almost on the basis of having a single student—the camera. For example, when a small item is displayed, or a certain angle in a crystal model is the point at hand, it need be shown only to the camera and every student may see it at once. Consequently, the pace may be quickened at these places. It is estimated that, taking all factors into account, an increase of approximately 20% in pace can be effectively achieved in TV instruction in comparison to conventional teaching.

In spite of the possibility of increased pace, the instructor welcomes the "feedback" from his students which serves as a governor to his teaching speed. In TV instruction, there is definite feedback, although it is delayed because of the nature of the medium. Whenever an unusually good demonstration is performed, or regretably when an error or omission is committed, students are quick to inform the instructor. This information oftentimes comes in written form, which makes the feedback very certain.

In order to provide communication from the student to the teacher, each student was provided with postcards addressed to the instructor. During the course a total of 120 cards were received.

Proctoring, Testing and Grading

Only a minimum amount of proctoring was assigned to the various sections. At OSC each section supplied a section leader who was selected at registration time by invitation. Students showed reluctance to accept such an appointment only for valid reasons such as a class at the preceeding or succeeding hours, outside work, etc. Two of the section leaders requested they be re-appointed a second time. Their duties involved up a packet of materials at the instructor's office each day, distributing hand-out material (outlines, graded papers, etc.) collecting hand-in material, returning it to the instructor after class, and providing for the section's TV viewing (tuning, lighting, seating, etc.).

On the other campuses, the TV sections were proctored by regular staff personnel, but here, particularly at UO, the materials were passed out and picked up more on a weekly basis, and for the most part the students got along all right. That is, they seemed to require only a minimum amount of direct leadership, and even in emergencies (malfunctioning TV receiver, testing proctor not showing up with the tests) they showed a remarkable ability to handle the problem satisfactorily.

In general, the group morale was such that there was little concern about the misbehavior of individuals because the group usually corrected the misconduct without resorting to the authority of the instructor. Only two occasions arose that required disciplinary treatment from the instructor—a student who liked his cigars too much to extinguish them during class and another (a section leader) who created the ill-will of his section by inspecting his section's homework both before and after it was graded. Both difficulties were resolved.

Testing was conducted on a weekly basis in addition to the final examinations. The weekly tests were about 20 minutes duration, and students generally favored this regular testing procedure. The tests covered the preceeding week's work along with questions that prodded the student to recall and to apply important ideas treated during a period of several preceeding weeks.

Grading of tests was completed promptly with the aid of student readers who, on account of both the objective nature of the tests as well as their interest in the project, performed well and consistently in turning out graded papers that seldom came back for re-grading. The student paper readers (undergraduate science majors) deserve a fair share of the credit for helping to establish a high degree of confidence with the students with respect to impartial grading. There was very little criticism or dissatisfaction with the grading of tests in spite of the tendency of the student readers to be ruthless in their insistence upon letter-perfect papers.

The weekly tests accounted for 45% of the student's final grade, with 30% for the final exam and the remainder of credit for the experiment and homework reports. It is estimated that on the reports students were at least 95% prompt in their submission of them on time, and a majority of the late papers were the result of excusable circumstances—illness, field trips, etc.

An interesting sidelight on class attendance arose when students, due to illness, could not attend class but watched the lecture at home. They later picked up the hand-out material at the instructor's office, explained their absence, but were usually happy to accept a fair responsibility for the work "missed" because they had been aware of the progress of work in class even though not on campus.

Enrollment and Drop-Outs

The following table shows the enrollment at OSC for the three terms of the course.

ENROLLMENT AT OSC

Term	*At Start*	*At End*	*Drop-outs: Course*	*College*
Fall	72	71	1	0
Winter	72	72	0	0
Spring	72	69	0	2

It is notable that only one student dropped the course during the first week of the fall term, none dropped during winter term, and two students left college during the spring term. This is particularly noteworthy when compared to the continuity of enrollment usually encountered in the general chemistry course when taught conventionally.

Several factors may account for the low number of drop-outs. Approximately half the students were enrolled in pre-nursing (a group usually well oriented to the program of study) and in order to complete their program there is greater emphasis on completion of the chemistry course than with some groups. There may also have been a considerable "Westinghouse effect" which motivated the students to perform above average because they knew they were part of an experiment.

The enrollment at UO persisted at an almost constant level during winter and spring terms, 5 having dropped out of a total of 55 during the fall term. Both OCE and Willamette started out with seven students each, but they both fell to four students each winter and spring term, all of whom finished the course.

Student-Instructor Relations

Television instruction creates one of the most radical departures from conventional instruction in student-instructor relations. This is probably one of the most formidable features of a telecourse when viewed by the new enrollee. On the basis of prior experience the student should be expected to feel "lost" in such a situation because there is little or no opportunity for the instructor to become personally acquainted with his students. There is even concern in some quarters that the learning situation is jeopardized by this lack of personal contact, and that the interposition of a mechanical, electronic device between the instructor and student curbs the whole educational process.

On the other hand, the student actually becomes very well acquainted with the instructor in spite of the "one way" communication inherent in the TV method. That is, the TV camera brings to the student those close-up views that reveal the facial expressions, the nuances, the subtlies, and the individual characteristics of the instructor. Only the few in the front rows of a conventional class may be near enough to witness these things. In general, students appear to be much better acquainted with the instructor in a TV course than they would be in a conventional class of 75 or more students. It is startling when a total stranger appears in the instructor's office and with no hesitation identifies himself as a student in the TV course and immediately gets to the point of his visit—all an indication that he has become quite well acquainted with his instructor through watching him on TV.

There yet remains the question of whether or not it is proper for a course to be taught by an instructor who cannot personally know his students. Whether it is proper or not the students appear to learn the material as well as they did conventionally, and I must add at this point that never in a course in general chemistry have I enjoyed more the constant and high level of interest and effort which the students showed toward the course. They have never worked harder nor produced more, their motivation was high, and this constant "feedback" created a strong motivation to produce the best course possible right up to the very last class of the spring term. I realized that I didn't know my students very well personally, but I was certain that they were with me and that I was continually being expected to do my part in the instruction of the course. They were my most critical judges and at the same time I felt that they were depending on me to keep things moving at a challenging pace.

In addition to the 120 question cards received by the instructor there were occasional office calls by approximately 25% of the OSC group. About half of the question cards came from OSC, half from U of O students, and the remaining few from the other two campuses. A number of letters from the viewing public showed that there were interested "outsiders" auditing the course, and 20 of these regularly requested copies of hand-out materials, thus indicating rather serious participation on their part.

Student Morale and Reactions

Although the research group is making a much more adequate study of student acceptance of TV instruction than is possible for the instructor, certain facets of this matter can be appropriately discussed here.

In general, student morale seemed to begin with an open mind toward the experiment, although there was concern about the lack of personal contact and the problem of doing something radically different than anything else in their experience. After about 2 weeks, however, once they began to write tests and see grades on their papers, they began to express themselves, and then morale took on a positive aspect. Students feeling apparently became more favorable as the fall term progressed, and this level of attitude carried over into the winter term.

Shortly after winter term began, however, student reactions indicated a flagging in morale, and this is attributed partly to the fact that the topics introduced in winter term are all radically new ones which taxed the abilities of all the students. We were no longer reviewing and extending the treatment of topics they had in their high school course, and this period in the course turned out to be the real test of whether the instructor could "get through" to his class. By the end of winter term, however, a different student attitude had developed—a more sophisticated one replacing the earlier one of expectation and novelty. The students had now become less aware of TV and more conscious and concerned about chemistry. As they gradually mastered some of the more difficult topics during this term, they developed more confidence toward the subject matter. By the end of the winter term, students appeared generally to be basically challenged, still interested in their grades as much as ever, but their questions reflected a more solid attitude toward the subject matter itself.

Spring term started on with a moderately high morale which seemed to maintain its level in general. This may have been partly the result of the subject matter—a few more applied topics than in previous terms—but it also seemed to be the result of having developed a searching interest in the subject. Students frequently raised questions that involved an extension of the subject matter into outside areas, and they showed interesting signs of "out growing" the textbook for the course.

The following results of a questionaire may sum up student reaction in another manner:

Results of Student Questionaire at OSC, June, 1959.

If you were to take the course all over again, which would you choose?

	All TV Group	*Mixed*
All session by TV	12	6
Lecture and discussion by TV, Lab conventional	4	0
Lecture by TV, discussion and Lab conventional	2	1
All sessions by conventional	1	0

The Instructional Environment

Teaching by television causes an instructor to do some strange things. First of all, he reorganizes his whole course with the primary aim of bringing it up to date. Old lecture notes are combed for worthwhile ideas and information, and the rest of them are junked. He visits the library more frequently and the journals that should be read are now eagerly sought for whatever material they might provide by way of current interest. Instead of pattering about the weather and last weekend's football scores, he is likely to be found discussing and inquiring about instructional matters with his colleagues. In other words, an assignment to a television course provides a wonderful motivation to improve one's teaching, and I feel that I am now appreciably better equipped to teach than I was prior to this experience.

The effectiveness of one's teaching should logically be improved because of the additional effort expended in preparation. It is easy to attribute much of this to the additional help and time available for preparation over and above that conventionally used. Yet, during this past year I have often wondered about how effective an instructor I might be if there could have been a singleness of purpose over the years toward the goal of efficiency—and how efficiently can an instructor's time be spent in preparation, consultation, paper grading, etc.? Maybe the lack of a refreshing motivation discourages the typical instructor from wandering far from the beaten path, with the result that many of us year after year, are satisfied to "meet our classes" rather than aggressively lead them.

Television instruction, once the preparation is made, is no more of a strain than working with a typical lecture section. At first, there is the glare of the studio lights, the cameras with their winking red lights, the fear of not fitting in properly with the production crew, the problem of having enough material to last the full class hour, and the realization that there is an unspecified audience including the inevitable, keen kibitzers ready to check every move. Shortly, however, an adjustment is made which permits the instructor to concentrate on the task of teaching, and then the work becomes quite satisfying. The crew helps time the lecture, if you forget something that was rehearsed they cue you in, and you soon learn that educational kibitzers are a subspecies of sidewalk superintendents whose comments are most helpful and kind. The studio lights are no brighter than the lights in a regular classroom should be, and the camera degenerates from a one-eyed monster into a piece of machinery for which a fondness soon develops akin to that which one has for a faithful, old family car.

The lack of intimate contact with one's students, noted previously in this report, interposes a difficulty which, though inherent in TV teaching, turns into somewhat of a blessing in disguise. In teaching general chemistry, there is the customary problem of finding a fair portion of the class either unprepared or unwilling to launch into a rigorous college science course without the constant help of the instructor. This, to a great extent, explains the origin and popularity of the recitation or tutorial session which is now traditional in general chemistry instruction. In these sessions, numbering no more than 20 or 30 students, the student is encouraged to ask questions, seek help and guidance; he is given answers to his questions, tests are reviewed, routine practice is drilled at the blackboard, etc. All these activities have been recognized as effective teaching procedures to assist the student in his learning of the subject matter. But the very nature of these sessions, because of the premiums placed on student participation by asking questions, seeking help, etc., sometimes discourages rather than encourages the student to find his own answers, dig himself out of his own problems, or find the correct answers for the test that he flunked. For many students, these sessions are liable to be crutches on which he hobbles through the course, rather than experiences where real learning occurs.

In general chemistry course via TV, the attempt to produce a class session comparable to the traditional recitation session evolved into an informal lecture dealing with the questions that students sent in on their postcards. The nature of this scheme practically eliminated many of those questions for which the student should find answers himself. Homework and test papers were scored in such a manner that the student could figure out where he erred, but only very rarely did a student inquire about the mechanics of the scoring. The questions that were raised usually represented problems that could not be readily resolved by reference to the text or problem manual. Typical questions were: I'd like to see another example of the problems on the asignment; except for the math I'm getting along all right. Where can I find out about using a slide rule? Can the cameraman show a little more blackboard and a little less Slabaugh? Are elements to the left in the periodic table always more metallic? I'm having trouble writing electronic dot symbols for elements with N, O, and P shells. Is it true that people at Anacando, Montana, have more cancer because of the SO_2 fumes? Why does naphthalene added to gasoline pep up a car? Is the story about Bufferin being superior to Aspirin true? and have you heard the latest joke? An instructor in general chemistry will likely recognize most of these questions as valid indications of the students' desire to push ahead of the minimum requirements.

The instructor was pleased to note a gradually developing degree of independence and personal resourcefulness on the part of the student as the course progressed. This attitude toward independent study is attributed in part to the lack of a regularly scheduled recitation or tutorial session and the communication barrier inherent in TV teaching. As a result of this experience it is suggested that, in order to encourage more sophisticated study habits, the customary recitation session be optional and not a regularly scheduled meeting of the class. The more students are encouraged to study, drill, and solve problems on their own the sooner they will develop independent study habits. Television teaching incidentally, is hardly adaptable to the supervision of study halls.

By way of another consideration of the structure of the course in general chemistry, it was interesting to note that although students could hardly be expected to develop manipulative techniques in the TV course, they saw a chemist at work, they saw him handle the tools of chemistry properly, and the outcome of the experiments had meaning. In making a few tests on students' learning via this area, it was discovered that students almost invariably started out properly. That is, it appears that the observation of experimental techniques may be a sound means of introducing the students to manipulative techniques. Here may lie a strong potential for TV teaching —offering the student an introduction to the laboratory, where either a few minutes prior to each session is devoted to TV instruction, or where a part or the whole first term of the course is TV instruction. Then, when the student goes to the laboratory he will have a better idea of what constitutes valid laboratory work. Laboratory work has been traditional in academic chemistry for over a century, but the tradition is based upon intimate contact between the student and an experienced chemist. The problem of large enrollments, shortage of staff, laboratory space, etc., might well be resolved by employing the best of both conventional and TV methods of instruction.

At this point, it is doubtful if the total course in general chemistry should be taught by TV. On he other hand, there are certain potent advantages in the TV method which should not be overlooked.

Kinescope Recording

The comments offered here may be of interest to those who wish either to make kinescope films or to use kinescope films of a TV course.

Compared to TV teaching without recordings being made, the preparation of kinescopes poses several severe problems. When recordings are being made, the instructor must eliminate most temporal and local references. This poses considerable difficulty if the subject matter involves either of these two factors. In general chemistry, temporal facts are involved particularly where applications to current events is concerned. The anaolgies, the examples, the off-hand comments, humor, and color must be carefully coutrolled, and if possible, generalized. Usually, however, most of the basic material as produced for a conventional course needs very little change for recording, and during the production itself the instructor is unaware of the recording process itself, except for the five-minute break at the end of 30 minutes while a new film is loaded into the kinecamera.

With a kinescope recorder on campus, a proposal quite separate from TV instruction is suggested. In much the same manner that an instructor be required to have periodic chest X-rays in order to prevent contamination of his students, it should be required of each instructor that at least once a year at least one lecture be recorded via kinescope, and that the instructor himself be required to view this recording in its entirety at least once each term until a new recording is made. The primary objective of this is self-analysis, although there is a host of uses that may be most interesting such as administrative matters in connection with tenure, promotion, and retirement. After all, the published record of an instructor's activities in research are eagerly sought for these matters, and if an instructor is employed primarily for classroom teaching, how much more crucial would it be to refer to such recordings in these matters. It is possible that his requirement would not be very popular in many quarters, but by making it available and optional, its usefulness would still be apparent. Any instructor conscientiously interested in improving his teaching would, for this reason alone, be interested in participating in this program.

The Filmed Course

Complete filming (16mm black and white with sound, and excepting the 5-minute intermission) of the general chemistry course was made except for the 5-minute intermissions. This makes a pile of 45-minute reels ten feet high, weighing over half a ton, and equivalent in length to 52 major Hollywood productions.

The lack of recording of the five-minute intermissions during each class brings to mind a matter which may be of concern to those planning to use these films. During this 5-minute intermission, several matters were regularly discussed with the students who were enrolled in the course this year. The typical housekeeping problem of scheduling, testing, homework assignments, etc., were handled, and occasionally a student's question was explained. I believe that this represents a significant part of the "personal" contact that was made during the course, and it is urgently suggested that when these films are used for a course that the instructor who is currently in charge of the class provide for a similar current orientation of the course. This short "live contact" with the students may spell the difference between acceptance or rejection of the course itself. Furthermore, many students have difficulty making the grades they would like to make, and it is obviously simple to blame the instructor, the textbook, and now the method of teaching for the students' inadequacies. Consequently, the regular, though brief five minutes housekeeping session in each class may be the means of giving the recorded course enough life to make it workable and acceptable.

Recommendations

For the most part, the instructor found it possible and practical to adapt his teaching to the television medium without serious difficulty. Two apparently insurmountable difficulties persist, however, and these must be faced by others who follow because no adequate solution was discovered during this past year.

1. The parking problem. It is recommended that TV instructors who regularly need a car on campus for transporting materials from their department to the studio be provided a reserved space at an appropriate location. Under the present regulations I found it necessary to either park illegally or at a distance of four blocks from the chemistry building. Since staff cars are considered as merely a means of transportation to and from the campus my car was treated as just another illegally parked car. Consequently, I found myself ridiculously spending time and energy carrying by hand many materials needed at the studio.

2. Studio space and schedule. With one small studio and many (too many) programs scheduled from it, there is naturally going to be some difficulty. The answer to this is either to reduce the fringe type, fill-in program, or to provide additional studio space in order to permit adequate preparation and rehearsal. Efforts to alleviate thise difficulties, which became almost unbearable during the winter terms, were only partially successful.

Acknowledgements

A major share of the credit for the success, if any, of the general chemistry course via TV is due to the fine cooperation and spirit of helpfulness shown by all concerned. The instructor particularly

wishes to recognize the continuous help and cooperation of the production crew.

The technical crew, headed by Professor Grant Feickert, performed well and beyond the call of duty. To Bob Tinkle, Leo Reetz, Les Mock, Bob Crook, and Buzz Manning go major credit for the smooth, day to day operation of the equipment at the studio.

Mr. Bill McGrath showed a pleasing adaptability and high capability in handling the producer's job, and to him and his assistants go a big "thank you".

In the instructor's office, the help of Mr. Orville Sprague, Misses Diane Loman, Joan Marsh, Jean Hays, and Muriel Lamb, who showed much more than an hourly pay rate interest in their chores, is gratefully recognized.

An finally, thanks is extended for the fine pinch hitting of Drs. Caldwell and Parsons, the splendid job of glass blowing demonstrations by Mr. Meeker, as well as the advice and suggestions of others in the Department of Chemistry.

Respectfully submitted,

W. H. SLABAUGH.

Appendix F

Comments from Faculty Questionnaire Regarding Inter-institutional Television

Tables 87 through 89 list qualifying and explanatory comments made by faculty members to specific items on the faculty questionnaire which was presented in the body of this report. The basic rationale for the inclusion of such comments is that they provide the reader with considerable additional insight into the basic determinants of faculty attitudes. They give some operational impact to tables of check list data and percentages, and they add to the reader's depth of understanding.

Footnotes indicate the specific item (body of report) where tabular data are recorded. Comments listed were generally made on the Initial (1957) Questionnaire and as such may not necessarily represent post-experimental faculty opinions. It should also be noted that such lists of statements designed to give a flavor of meaning to tabular data are also limited in value and possible interpretation; i.e., they represent responses only from those faculty members who were sufficiently motivated to write comments. As such, they are not necessarily representative of the opinions of the faculty as a whole.

Table 87

FACULTY COMMENTS ON 1947 QUESTIONNAIRE REGARDING THE EFFECT OF INTER-INSTITUTIONAL TELEVISION ON COMMUNICATION AND COOPERATION AMONG THE PARTICIPATING INSTITUTIONS[1]

Examples of faculty opinions stating why inter-institutional television should increase cooperation among institutions:

Should make cooperation in course planning and outlining necessary—group evaluation of program by participating institutions should follow.

Coordination necessary for such a program will draw the participants closer together.

Probably limited to faculty of departments involved directly.

Should help some. Will cause more contact between departments with similar interests and subject matter.

If teaching is inter-institutional schools must act jointly and plan together.

Will result in closer liaison and knowledge of each other's programs—coordination of presentation.

Cooperation will result provided a need is shown to exist for such a program.

Cooperation between institutions on a single objective should result in awareness of community of interest in same objective.

Can greatly increase cooperation but if poorly managed can also adversely effect relations.

TV affords an opportunity; if well used, cooperation should result. If opportunity not well used, inter-institutional rivalry, squabbling and ill will may result. Use made of opportunity will be determined by the vision and maturity of Administration immediately concerned.

There will be cooperation as long as students and faculty keep good faith toward participating professors, and encourage constructive suggestions relative to information presented and techniques employed instead of back-biting criticism.

Examples of faculty opinions stating why inter-institutional television might decrease cooperation among institutions:

Errors of programming, planning, or instruction will be the "fault of the other school."

Might lead to some friction—rivalry and jealousies.

Might well increase rivalry and suspicion, and make TV programming an added bone of contention.

Where similar courses are taught at several institutions, cooperation will decrease because of jealousy and miscellaneous human factors.

Decrease cooperation—struggle as to who gets what classes will become bitter.

Increase if properly handled. Decrease if managed to favor one institution.

It may introduce a spirit of *Quid pro quo*, so that institutional parity must be maintained.

Private college would be in danger of losing its identity—favor separation.

Depends on parties involved and personalities.

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[1]. Comments refer to faculty responses in Table 63.

Table 88

FACULTY COMMENTS ON 1957 QUESTIONNAIRE REGARDING OPEN-CIRCUIT AND CLOSED-CIRCUIT TELECOURSES.[1]

	OCE[2]	*OSC*	*UO*	*WU*
Favor open-circuit telecasting:				
See no problems and some possibility that public may profit; good public relations; stimulate public interest in education; general public pays the bill.	11[3]	62	51	15
Better appreciation of what higher education is trying to do; public viewing might dispel erroneous views about higher education now held; aid to adult education.	2	15	31	3
Better preparation as a result of knowledge of wider audience.	2	7	2	0
Education for those unable to attend classes for various reasons; basic to educated electorate.	0	6	11	4
Undecided:				
Course content should not be influenced by open-circuit audience; too early in research program to anticipate effects on public; highly inappropriate in some areas; might be a mental hazard for the professor	3	5	8	1
Oppose open-circuit telecasting:				
Public will get incomplete picture from isolated viewing; might change emphasis in teaching; misinterpretation by general public; subject matter discussed less freely; pressure groups would interfere.	1	10	16	0

[1] Comments refer to faculty responses in Table 64.

[2] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

[3] Figures represent frequencies, not percentages.

Table 89

FACULTY COMMENTS ON 1957 QUESTIONNAIRE REGARDING APPROPRIATENESS OF INTER-INSTITUTIONAL AND INTRA-INSTITUTIONAL TELEVISION INSTRUCTION[1]

	OCE[2]	OSC	UO	WU
Favor intra-institutional over inter-institutional TV.				
Facilities and interest on this campus only; area too specialized; not sufficient enrollment on other campus.	1[3]	21	26	2
Some personal contact with students still possible; better courses developed if only one faculty and institution is involved, because course can be more suited to the students' needs; standards can be better maintained; institution should control instruction and instructor.	2	14	26	6
Too many differences of courses, aims, procedures in inter-institutional; problems of organization and time consumed on inter-institutional basis.	3	6	2	1
Favor inter-institutional over intra-institutional TV:				
Dissemination of information to greater numbers simultaneously; would make a course available elsewhere; maximum use of available materials and personnel; make specialty available; economically sounder, more efficient.	11	18	29	3
Potential reduction of teaching load makes time available for specialized and graduate teaching; better quality instruction will be provided at all institutions; most able professors will be made available from each school; more varied points of view in presenting subject.	11	39	25	6
Would standardize course material and methods; better experimentally, promote cooperation and advancement among schools; save duplication; no particular advantage from intra-institutional presentation.	2	20	14	5
Other:				
Prefer a combination of inter- and intra-institutional TV.	0	5	3	1
Depends upon institution presenting.	2	17	10	0

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[1] Comments refer to faculty responses in Table 65.

[2] OCE, Oregon College of Education; OSC, Oregon State College; UO, University of Oregon; WU, Willamette University.

[3] Figures represent frequencies, not percentages.

Appendix G

Comments from 1957 Faculty Questionnaire Regarding Preferences for Meeting Possible Shortages of Staff

Comments here listed are generally verbatim statements, or abstracted statements made by faculty members in responding to the 1957 questionnaire. They represent qualifications and explanations of their responses to the item which is considered in Table 66; i.e., related to faculty preferences for meeting personnel shortages in institutions of higher education. There has been only a cursory attempt to categorize or order these comments. Frequency tabulations of comments are not presented. Generally, each comment is representative of an idea that was mentioned from one to five times. A few ideas were mentioned as many as twenty or thirty times.

The distribution of comments does not accurately reflect the proportion of responses to the categories listed in the original item in Table 66. This is probably so because respondents who marked the "other" category were asked to explain their response, whereas respondents marking the television categories were not asked for qualifications.

The rationale for the inclusion of these remarks is that they represent the thoughts of a large number of individual members of the faculties of the participating institutions regarding means by which potential staff shortages may be met. As such, they merit consideration by anyone interested in this pressing problem.

Examples of faculty comments favoring an increase in the size of conventional classes:

Larger classes would be simpler administratively and procedurally—better student-teacher contacts maintained.

With improvement in teaching aids and classroom climate, larger classes can be handled in some areas.

Larger sections per professor with more graders and laboratory assistants—decrease extra and non-essential courses.

Classes not filled to capacity at present—no need for TV.

Examples of faculty comments regarding extension of the use of television.

Would seem that extending the use of inter-institutional TV is answer, but do not feel enough is known about it at present.

Larger lower division sections could be handled on inter-institutional TV.

Use of inter-institutional TV would release other instructors for other work.

In classes where large enrollments lower teaching effectiveness, inter-institutional TV should be of value in providing for the increased enrollments.

Believe that we must use this TV medium; question is how can we best use it.

Single-institutional TV all right if workable.

At present image size restricts classroom size. Until image size and quality are improved, solution of staff shortage likely to be solved through TV only by pressure on small-classroom facilities.

Would prefer to move slowly toward inter-institutional TV—eliminate problems through observing single-institution use.

To release time for top teachers and have smaller classes meet to discuss the "TV" subject for a shorter class period would be preferable to increasing class sizes.

Larger specialized classes could be handled on single-institution TV.

TV will not solve staff shortage, but it can make the best quality instruction available to more people.

A good professor before a TV camera with time for preparation probably would do as well as in a classroom.

Use TV in certain types of classes, where strict lecture method is employed.

TV combined with smaller laboratory sections for personal help.

Intimate teacher-student contact is possible only in classes with less than 20-25 students—when larger, TV can be used.

In large section elementary courses TV might be used for lecture only, but not for recitation and laboratory.

Feel that TV lectures at university level are not the answer. Maybe of some use at jr. college level, or in specialized institutions teaching applied material, but not wherever the main aim of the institution is to further creative scholarly activity.

Any useful answer here depends on where the enrollment increase and staff shortages occur. Probably will not be uniform nor necessarily be in areas where TV might profitably be used.

The important thing is to do the job of instruction well. As there is little information now available on efficiency of TV education it is not possible to answer some of these questions.

Do not think TV will materially help to solve shortages of staff or funds.

Examples of miscellaneous faculty comments regarding means of meeting future staff needs:

Assign certain staff to extra-curricular activities and keep most of the staff teaching.

Make university lecturing more attractive by way of salary increases and research facilities.

More independent work by students—use of part-time instructors in elementary courses.

Staff increase mandatory no matter what method used—qualified persons are necessary for evaluating student progress and achievements regardless of the system used to teach students.

Hire more teachers—TV should be only an enhancement to courses, not a substitute for teachers.

Use graduate assistants to handle more teaching than at present (as is done at Harvard and elsewhere).

Do not believe reliance can be placed on any single method.

For upper division, believe the only possible solution is increased selectivity of students.

Standardize all introductory and survey courses—decrease time instructor spends presenting material in these, but increase time in general preparation and graduate assistant supervision.

Do away with graduation, a four-year ceremony—do away with padding and "stretch-out."

More colleges close to home—minimizing housing problems—funds could be used for other facilities.

Require students to pay bill through increased tuition or appropriations so as to enable employment of adequate staff.

Encourage honors study.

Development of adult education program and post-high-school courses on a community level for students not qualifying for higher university entrance.

Sound tape—perhaps films.

Consolidation of course offerings.

Encourage industry to lend us qualified people to help.

Keep college in full swing 12 months of year.

Introduction of European lecture system with tutorial assistance available to student if desired and paid for.

Grouping can go on in college as in elementary school.

Use Saturdays and evenings—use physical plant more efficiently.

Change three hour to five hour meetings, thus making better use of classroom space—in some areas of study large lecture classes are practical, especially if smaller quiz classes with graduate student help can be organized.

Eliminating the three-term system would be helpful.

More rigid entrance requirements and higher academic standards.

Relieve instructional staff of busy work, outside responsibilities, clerical details, etc.

Appendix H

Specific Suggestions for Further Research in Televised Instruction Selected from the 1957 Faculty Questionnaire

The following comments are generally included verbatim as they were reported or with slight modifications to conserve space. There has been no effort to write them as research hypotheses or research questions; rather, the intent has been to present a list of ideas. The classifications into which they have been categorized are general and not always mutually discrete in terms of specific items. Many of the specific suggestions are already being studied in the Oregon Project. Frequency tabulations of comments are not presented. Generally, each comment is representative of an idea that was mentioned from one to five times. Some ideas were expressed by even greater frequencies.

1. Techniques of Evaluation:
Development of more adequate measuring techniques.
Measurements beyond the objective data provided by typical achievement tests.
Subjective evaluations by laymen who have seen the procedure in operation.
Subjective evaluations by faculty members who have taught on television, faculty members who have participated in a television course in some manner and faculty members generally.
Interviews assessing student attitudes.
Student achievement in home vs. away courses.
Follow-up studies of students who were in TV courses.

2. Specific Effects of TV on Students:
Results after novelty has worn off—with a control group.
Is there lowered morale among students?
Effect on study practices and procedures.
An attitudinal survey of the attitudes of public and private school students.
Effect on low-interest, low-ability students.
Effect on high ability students.
In what specific ways does TV instruction affect students?
Does the student develop a critical, questioning habit of mind?
Long-term effect of TV instruction on percentage who go into graduate work.
How well does TV hold student attention?
What is the rate of student learning by TV?
In there differential retention between students taught by TV and conventional?

3. Effect of TV on the Quality of Education:
How does it stereotype knowledge?
What are the long-term educational effects?
What are the areas in which educational TV is successful—unsuccessful; what are the criteria for success?
Will TV influence the type of material which is taught?
What is the effect of TV on the development of values and attitudes?
Would the tendency to emulate scholarly professors be diminished?
What is the process by which course objectives, content, and procedures are set?

4. Faculty Reaction to the Use of Television for Instruction:
Is there a lowered morale among participating professors?
How does televised teaching affect prestige relationships between faculty members?
Does TV result in a tendency to develop a master teacher—one single authority?
Study of faculty and general staff attitudes toward televised instruction.

5. Study of the Teacher-Pupil Relationship in TV instruction:
Study of intangibles which pass from instructor to student.
Can TV lectures be adapted to the daily needs and ability levels of a particular class?
What are the means for compensating for loss of personal contact?
How does the remoteness of the principal instructor affect learning generally?

6. Research and Experimentation with TV as an Instructional Medium:
Demonstration of children's work for classroom use.
Explore the use of different techniques than the lecture.
Learning theory explanation of TV instruction.
Determine available materials for supplementing teaching; documentary films, etc.
Development of TV as a supplement to teaching.
Research in technical developments, larger screen, less strain on eyesight.
Test the effectiveness of having one camera on one of the local TV classes, and feeding a studio monitor so the TV professor would have some idea of how he was "getting over."
Have observers assess the effectiveness of the professor when he can "see" the audience as opposed to not being able to see them.
Alternate students in TV and non-TV groups.
Study the effect of the removal of color, full range of sound and odor from classwork demonstrations.
Determine how much time is devoted to thorough study of material; new ways of presenting it.
Determine whether a short ten-minute question period at the end of a broadcast (by 2-3 "in-studio" students) would (a) increase attention span, and (b) make the lecture seem less remote.
Investigate the possibility of having regular twice (or more) weekly TV lectures or demonstrations or film material to supplement the regular classroom instruction.
Further investigation of "communications systems" which have proved successful.
Professor and class both shown on TV and its effect on learning.
Teach a course entirely by TV.
Integrate TV course with later courses of a sequence.
Follow up by faculty associated with viewing students, in crystallizing ideas presented by the TV lecturer.
Experimentation which controls interest, appeal, etc.
Comparison of "canned" vs. "live" programs.
Conduct the same experiments, using moving pictures rather than live TV for purposes of comparison.
Determine means to promote student discussion.
Allocate sufficient effort and focus new ideas of production on this technique.
Possibility of using portable cameras under the normal classroom situation.
Investigate the possibility of TV demonstration type laboratory work.
Can certain parts of a course be televised and other parts not?
Can studies indicate how to deal most effectively with attitudes,

problems, of a personal nature (when raised by students) and controversial issues when taught by television?

How can TV handle difficulties in presentation of material ordinarily leading to multiple questioning by students?

How can the more advanced courses, graduate seminars, etc., be adapted to TV without losing the value of student-professor inter-play which exists in the traditionally small classes of these types?

What effect does TV have on improving classroom instruction, particularly as it affects methodology?

Have the home instructor teach the class, but use TV aids as a major part of the course.

Provide competent group to diagnose each presentation in terms of its over-all effectiveness and pass this on to the participant so he can progressively improve his skills as a TV instructor.

Experiment in foreign language teaching.

Assess the degree of success in foreign language programs in the East.

Develop a course in appreciation of the arts.

Present a course in physiology—neurological factors.

The intermittent use of TV in a class situation to bring in outstanding speakers or performers in Physical Education.

A study should be done on the effectiveness of TV instruction according to the various major fields of study, including speech and English Composition.

The effects of students in science and engineering not being able to ask the instructor questions as they arise during the course of the lecture.

Comparison of results of subsequent counseling work by a group of students having had TV instruction and another group having had conventional classroom instrction.

7. Factors of Administration, Cost and Efficiency:

How to allocate added costs to institutions.

Realistic evaluation of faculty time for presentation.

Determine proper teaching load.

Relative efficiency: Spend as much time, money and energy in optimizing classroom instruction (live) and compare this course with the televised one.

Determination of administrative practices and procedures appropriate for telecourse.

Study administrative attitudes toward television's effectiveness.

The problems of administration are most challenging and need "honest" study. There are many lessons we have yet to learn in group dynamics, human relationships and personnel. Many of these problems become the critical issues in such a program.

8. Inter-institutional Factors:

Extend to many smaller schools—extension courses.

What is the effect of institutional loyalties?

Administrative consequences of program for inter-institutional relations among faculty, administrators and students.

Problem of getting cooperation of all individuals and institutions involved.

What is the effect of various instructors—same subject, various campuses?

Examine the possibility of unified schedules, courses syllabi and testing procedures in all institutions.

What is the consistency of grading practices at various institutions?

What is the consistency of standards of work expected?

What are the differences in philosophies of specific areas among different institutions?

Methods of setting up an inter-institutional program of instruction in which all institutions will be fairly represented (as distinguished from a program set up by a separate agency for the various institutions).

Is there any difference in acceptance between single institution and inter-institutional TV?

Televise courses which are usually offered at one campus only.

Ways of improving cooperation between professors giving course and assistant in receiving institution handling the discussion period.

Ways of conveying to professor attitudes of receiving students.

Inter-institutional seminars on a two-way basis.

9. TV Professors as an Area of Research.

Determine basis for selection of professors—competence in area or as TV personality.

What is the impact of TV instruction on the teacher's intellectual life?

To what extent do instructors feel under pressure to present material in "acceptable" textbook means?

Investigate the effect of a unique contribution by a single member.

What is the effect upon the professor—tension adaptability?

What is the effect on instructor who becomes lab leader?

Will inter-institutional TV reduce general faculty resistance to observation of classroom teaching?

To what degree do the problems of inter-personal relationships affect selection of instructors, and do such problems hamper production.

What is the faculty reaction after having taught a course on TV?

Summary of the tips on what to do and what not to do before the TV cameras.

Adequate facilities for practice sessions for those persons interested in taking part in this teaching program.

Does TV tend to make the professor emphasize showmanship instead of scholarship?

10. Other Factors for Research:

How many (what kind) of people other than regularly registered students watch telecasts?

Telecast courses into high schools.

The possibility of allowing the general public to take these courses and eventually obtain credit that could aid in obtaining a degree.

Possibility of obtaining a channel which would not interefere with commercial stations.

Investigate danger that teachers will be thrown out of employment.

Investigate danger that machine will be considered substitute for people.

We should have available in summary form the experiences that other persons and states have had in the general field of educational TV.

Appendix I

Personnel Associated with Oregon Inter-Institutional Television Teaching Project

Administrative Officers:

John R. Richards, Chancellor
Oregon State System of Higher Education
Roy E. Lieuallen, President
Oregon College of Education
August L. Strand, President
Oregon State College
O. Meredith Wilson, President
University of Oregon
G. Herbert Smith, President
Willamette University

Project Personnel:

Glenn Starlin, Director
Inter-institutional TV Teaching Project
John E. Lallas, Research Director
Inter-institutional TV Teaching Project
University of Oregon
Jack V. Edling, Chairman
Television Committee
Oregon College of Education
Harold M. Livingston, Chairman
Television Committee
Oregon State College
Glenn Starlin, Chairman
Television Committee
University of Oregon
Robert D. Gregg, Chairman
Television Committee
Willamette University

Television Professors 1957-1959

Denis Baron (Educational Psychology: Learning)
Associate Professor of Education
Oregon State College
Roland Bartel (Appreciation of Literature)
Assistant Professor of English
University of Oregon
John E. Bellamy (English Composition)
Assistant Professor of Humanities
Oregon College of Education
David S. Brody (Human Development)
Professor of Psychology
Oregon College of Education
Robert R. Reichart (Educational Psychology: Learning)
Professor of Educational Psychology
Oregon State College
Wendell H. Slabaugh (General Chemistry)
Professor of Chemistry
Oregon State College
Wendell H. Stephenson (History of the United States)
Professor of History
University of Oregon
Donald E. Tope (School in American Life)
Professor of Education
University of Oregon

Operational Personnel:

James M. Morris
Program Manager
KOAC-TV
Grant Feikert
Chief Engineer
KOAC-TV

Oregon State College Studio:

William McGrath
Production Director
Carol Lounsbury
Production Assistant
Les Mock
Chief Engineer

University of Oregon Studio:

J. David Lewis
Production Director
Howard L. Ramey
Staging Supervisor
E. A. Kretsinger
Chief Engineer

Research Assistants:

Andrew Toribio
Henry Baich